Habitat Management Plan
for
Little John Wildlife Management Area
2019 – 2028

Division of Fish and Wildlife
Bureau of Wildlife

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Cortland, NY 13045

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Prepared by:

Mike Putnam, Wildlife Biologist
Land Management & Habitat Conservation Team

Bonnie Parton, Wildlife Technician
Bird & Mammal Diversity Team

Andrew Drake, Forester
Adam Perry, Wildlife Biologist
Adam Robedee, Forest Technician
Tim Yeatts, Forest Technician
Young Forest Initiative

Reviewed and approved by:

Steve Joule, Regional Wildlife Manager
Bureau of Wildlife — April 22, 2019 Date

James F. Farquhar III, Chief
Bureau of Wildlife — April 26, 2019 Date

Tony Wilkinson, Director
Division of Fish and Wildlife — 4/30/19 Date

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SUMMARY

In 1928, several Game Refuges were established across the State under a new program and one of those tracts was what is now known as Little John Wildlife Management Area (WMA). The transfer of 4,250 acres as the former Cleveland Estate to State ownership was the beginning for Little John WMA. The property was later increased significantly with the help of the Federal Resettlement Administration in 1935 by adding an additional 2,826 acres of land in the form of abandoned farmland surrounding the original acquisition. Truck trails, conifer plantations, and shrublands were all established later with the help of Civilian Conservation Corps (CCC) efforts as a way to establish more forest, better winter range habitat and seasonal feeding areas, particularly for game species. As the past farmland and newly planted forests continued to mature, by the 1950s and 1960s, more forest cutting occurred to maintain boundaries and roads as well as provide more habitat to a wider range of wildlife species as the management focus broadened from game species to all species. Currently, Little John WMA is predominantly mature forest with extensive, meandering wetlands through what is mostly typical northern hardwood forest. The property is typical of New York State's Tug Hill region and attracts species common to that area with its forest composition, altitude and seasonal snow loading. Species such as ruffed grouse, snowshoe hare, broad-winged hawk, black-throated blue warbler, Canada warbler, American black duck, black bear, river otter and fisher all inhabit the property.

Habitat management goals for Little John WMA include:

- Maintain the WMA's intermediate and mature forested acreage at approximately 76% to continue to provide habitat diversity for forest species.
- Manage approximately 13% of the WMA as young forest (14% of the forested area) within the next 10 years to improve habitat for snowshoe hare, ruffed grouse, and American woodcock.
- Increase shrubland habitat along field edges (slight increase, still under 1% of the WMA).
- Maintain the remaining 10% of the WMA as grassland, wetland, open water, and road/other.
- Provide habitat for a variety of wildlife species and enhance wildlife-dependent recreational uses that are compatible with wildlife conservation.

I. BACKGROUND AND INTRODUCTION

PURPOSE OF HABITAT MANAGEMENT PLANS

BACKGROUND

Active management of habitats to benefit wildlife populations is a fundamental concept of wildlife biology and has been an important component of wildlife management in New York for decades. Beginning in 2015, NYS Department of Environmental Conservation (DEC) Division of Fish and Wildlife (DFW) initiated a holistic planning process for wildlife habitat management projects. Habitat Management Plans (HMPs) are being developed for WMAs and other properties administered by DFW Bureau of Wildlife, including select Multiple Use and Unique Areas. The goal of HMPs is to guide habitat management decision-making on those areas to benefit wildlife and facilitate wildlife-dependent recreation. HMPs guide management for a ten-year time period, after which the plans and progress on implementation will be assessed and HMPs will be modified as needed.

Beaver Meadow

Photo: NYSDEC

HMPs serve as the overarching guidance for habitat management on WMAs. These plans incorporate management recommendations from Unit Management Plans (UMPs), existing WMA habitat management guidelines, NY Natural Heritage Program's WMA Biodiversity Inventory Reports, Bird Conservation Area guidelines, and other documents available for individual WMAs.

SCOPE AND INTENT

Primary purposes of this document:

- Provide the overall context of the habitat on the WMA and identify the target species for management;
- Identify habitat goals for WMA-specific target species, contemplating juxtaposition of all habitat types to guide the conservation and management of sensitive or unique species or ecological communities;
- Identify acreage-specific habitat goals for the WMA to guide management actions;

- Provide specific habitat management prescriptions that incorporate accepted best management practices;
- Establish a forest management plan to meet and maintain acreage goals for various forest successional stages;
- Address management limitations such as access challenges (e.g., topography); and
- Provide the foundation for evaluating the effectiveness of habitat management.

Within the next 5 years, this HMP will be integrated into a comprehensive WMA Management Plan that will include management provisions for facilitating compatible wildlife-dependent recreation, access, and facility development and maintenance.

Definitions are provided in Appendix A.

The effects of climate change and the need to facilitate wildlife adaptation under expected future conditions will be incorporated into the habitat management planning process and will be included in any actions that are recommended in the HMPs. For example, these may include concerns about invasive species, anticipated changes in stream hydrology, and the desirability for maintaining connectedness on and permeability of the landscape for species range adjustments.

This plan and the habitat management it recommends will be in compliance with the State Environmental Quality Review Act (SEQRA), 6NYCRR Part 617. See Appendix B. The recommended habitat management also requires review and authorization under the Endangered Species Act (ESA), National Environmental Policy Act (NEPA), and State Historic Preservation Act (SHPO), prior to implementation.

WMA Overview

Location

Little John WMA is located in DEC Region 7, Towns of Boylston and Redfield in Oswego county and Towns of Lorraine and Worth in Jefferson county. (Figure 1).

Total Area

7,925 acres

Habitat Inventory

A habitat inventory of the WMA was completed in 2018 and is proposed to be updated every ten to fifteen years to document the existing acreage of each habitat type and to help determine the location and extent of future management actions. Table 1 summarizes the current acreage by habitat type and the desired acreage after management. Desired conditions were determined with consideration of habitat requirements of targeted wildlife, current conditions on the WMA, and conditions in the surrounding landscape (see Landscape Context section below).

Table 1. Summary of current and desired habitat acreage on Little John WMA.

Habitat Type	Current Conditions (as of 2016)			Desired Conditions	
	Acres	Percent of WMA	Miles	Acres	Percent of WMA
Forest [a]	6,907	87%		6,035	[b] Decrease to 76
Young forest	158	2%		982	Increase to 13%
Shrubland	1	<1%		49	Slight increase, still <1%
Grassland	13	<1%		13	No change
Agricultural land	0	0%		0	No change
Wetland (natural) [c]	652	8%		652	No change
Wetland (impounded) [c]	0	0%		0	No change
Open water	90	1%		90	No change
Other (parking lot, utility ROW)	12	<1%		12	No change
Roads	92	1%	18	92	No change
Rivers and streams			26		
Total Acres:	7,925	100%		7,925	

[a] Forest acreage includes all mature and intermediate age classes of natural forest, plantations, and forested wetlands. Young forest is reported separately. Definitions are provided in the Forest section of this plan.
[b] The forest management proposed in this plan aims to replace poor quality forest, promote regeneration of native species, and establish a healthy mature forest for the future. See Landscape Context and Forest sections.
[c] Wetland acreage does not include forested wetlands, since they are included in the Forest category.

Interestingly, past conditions were documented in a management plan written for Little John in the 1980s, providing insight into habitat changes over nearly the last half century (Table 2). The habitat conditions from 1974 were derived from a re-inventory of the WMA by DEC.

Table 2. Summary of past habitat acreage on Little John WMA in 1974

Habitat Type	Conditions as of 1974	
	Acres	Percent of WMA
Forest [a]	6,528	91%
Young forest [b]	216	3%
Field, brushy field	37	1%
Lakes, Ponds and Swamp	376	5%
Total Acres:	7,157	100%

[a] Forest acreage includes natural, plantation and wetland forest.
[b] While unable to determine if these acres were actually young forest as defined in this plan, these acres in 1974 were classified as seedling/sapling size class, so for the purposes of comparison it is assumed this is indeed young forest

While the habitat types listed in Tables 1 and 2 differ slightly and the overall size of the property has increased since 1974, these tables show that the proportions of the major habitat types found on the property have remained relatively static over the years. Given the general history of the

area, it is suspected that the WMA had a much larger proportion of fields and early successional habitat when it was first acquired in 1928. The management goals identified in this plan focus on establishing additional young forest and shrubland to provide much needed habitat for the wildlife species that depend on it.

ECOLOGICAL RESOURCES

Wildlife Overview:

Little John WMA is predominately mature northern hardwood forest with some areas of intermediate and successional forest, some plantation forest, wetland shrublands, small ponds and creeks. Very little open space exists on the property other than small former timber landings and parking areas as is typical of the Tug Hill region. The area, with its directly East location relative to Lake Ontario, accumulates significant snowfall, which is often several feet deep and held late into the season. Wildlife species inhabiting Little John WMA include:

Otter Toilet

Photo: NYSDEC

- White-tailed deer, black bear, fisher, snowshoe hare
- Broad-winged hawk, red-shouldered hawk, barred owl, great-horned owl
- Black-throated blue warbler, blackburnian warbler, wood thrush
- Mallard, wood duck, hooded merganser
- Snapping and wood turtles, spring peeper, red-backed salamander

Wildlife and Plant Species of Conservation Concern:

The following federal or state listed Endangered (E), Threatened (T), or Special Concern (SC) species and/or SGCN may occur on the WMA (Table 3).[1] SGCN listed below include species that have been documented on or within the vicinity of the WMA that are likely to occur in suitable habitat on the WMA. Other SGCN may also be present on the WMA. Data sources include: the NY Natural Heritage Program, NY Breeding Bird Atlases,[2] NY Reptile and Amphibian Atlas,[3] DEC wildlife surveys and monitoring, and eBird.[4]

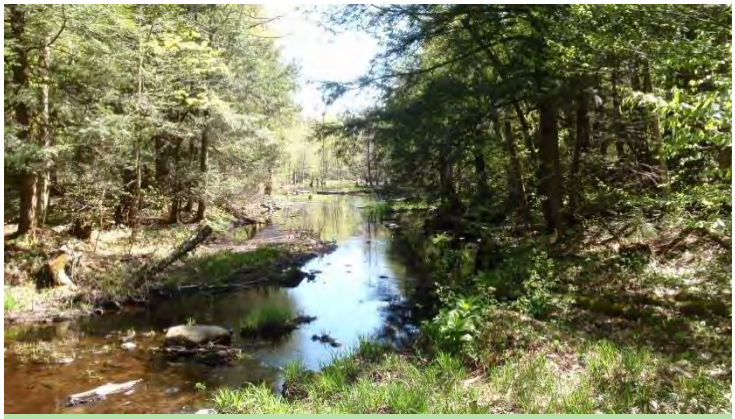
[1] The 2015 New York State Wildlife Action Plan identifies 366 Species of Greatest Conservation Need (SGCN) including 167 High Priority SGCN. Available online at http://www.dec.ny.gov/animals/7179.html.
[2] Available online at http://www.dec.ny.gov/animals/7312.html.
[3] Available online at http://www.dec.ny.gov/animals/7140.html.
[4] Available online at http://ebird.org/content/ebird/about/. © Audubon and Cornell Lab of Ornithology.

Table 3. Species of conservation concern that may be present on Little John WMA, including state and federal Endangered (E) and Threatened (T) species, state Species of Special Concern (SC), High Priority SGCN (HP), and SGCN (x).

Species Group	Species	Federal Status	NY Status	NY SGCN
Birds	American bittern		SC	
	American black duck			HP
	American kestrel			X
	American woodcock			X
	Black-billed cuckoo			X
	Black-throated blue warbler			X
	Blue-winged warbler			X
	Brown thrasher			HP
	Canada warbler			HP
	Golden-winged warbler		SC	HP
	Long-eared owl			X
	Louisiana waterthrush			X
	Northern goshawk		SC	X
	Olive-sided flycatcher			HP
	Pied-billed grebe		T	X
	Red-shouldered hawk		SC	X
	Ruffed grouse			X
	Scarlet tanager			X
	Sharp-shinned hawk		SC	
	Vesper sparrow		SC	HP
	Whip-poor-will		SC	HP
	Wood thrush			X
Mammals	Eastern red bat			X
	Hoary bat			X
	Indiana bat (myotis)	E	E	HP
	Little brown bat (myotis)			HP
	Northern long-eared bat (myotis)	T	T	HP
	Silver-haired bat			X
	Small-footed bat (myotis)		SC	X
	Tri-colored bat (eastern pipistrelle)			HP
Amphibians and reptiles	Common (Eastern) ribbonsnake			x
	Four-toed salamander			HP
	Jefferson salamander		SC	
	Smooth greensnake			X
	Snapping turtle			X
	Wood turtle		SC	HP
Fish	Brook trout			X
Invertebrates	None known			
Plants	None known			

Significant Ecological Communities:

There are several rare and significant natural communities located on Little John WMA as identified by the NY Natural Heritage Program. The state rank reflects the rarity within NY, ranging from S1, considered the rarest, to S5, considered stable; definitions are provided in Appendix A. The following significant ecological communities occur on the WMA; community descriptions are from *Ecological Communities of New York State, Second Edition* [5] (Figure 2):



Forested Stream

Photo: NYSDEC

- **Beech-Maple Mesic Forest (S4)** Closed-canopy hardwood forests with codominating sugar maple (Acer saccharum) and American beech (Fagus grandifolia). These forests occur on moist, well drained, usually acid soils. There are many spring ephemerals that bloom before the canopy trees leaf out.
- **Floodplain Forest (S2S3)** A hardwood forest that occurs on mineral soils on low terraces of river floodplains and river deltas. These sites are characterized by their flood regime; low areas are annually flooded in spring and high areas are flooded irregularly**.**
- **Spruce-Fir Swamp (S3)** A conifer swamp that occurs along gentle slopes of islands or along the margins of drainage basins where there is some nutrient input from groundwater discharge or subsurface flow.

Additional information about significant ecological communities is available in the Little John WMA Biodiversity Inventory Final Report (1996) prepared by the NY Natural Heritage Program.

Special Management Zones:

Special Management Zones (SMZs) are areas adjacent to wetlands, perennial and intermittent streams, vernal pool depressions, spring seeps, ponds and lakes, recreational trails, and other land features requiring special consideration. SMZs on Little John WMA include:

- 19 wetlands regulated by Article 24 of the Environmental Conservation Law and multiple additional wetlands shown on the National Wetlands Inventory (NWI; Figures 3-5). Each state-regulated wetland is protected by a buffer zone of 100 feet from the delineated wetland boundary, known as the adjacent area. There may be forestry prescriptions associated with forested wetlands and adjacent areas, and each management prescription will be reviewed individually for determination of impacts.

[5] Edinger, G. J., D. J. Evans, S. Gebauer, T. G. Howard, D. M. Hunt, and A. M. Olivero. 2014. Ecological Communities of New York State, Second Edition. New York Natural Heritage Program, NYS Department of Environmental Conservation, Albany, NY. Available online at http://www.dec.ny.gov/animals/29384.html.

- 22 streams (a watercourse entirely within the WMA) or segments of streams (a stream that meanders in and out of the WMA). The highest stream classification is C(T)[6].

Guidelines for habitat management projects within these areas are outlined in the Division of Lands and Forests *Rules for Establishment of Special Management Zones on State Forests and Wildlife Management Areas.*[6] Some habitat management activities may either be prohibited or restricted in order to protect these features. Any deviations from these guidelines will be addressed in the individual stand prescriptions.

LANDSCAPE CONTEXT

The goals of this HMP have been developed with consideration of surrounding landscape features, the availability of habitats, and other conservation lands adjacent to Little John WMA (Figures 6 and 7). The landscape within a three-mile radius of the WMA is primarily privately-owned land including:

- Forest (74%)
- Agriculture (2% combining cultivated crops and hay)
- Early successional (4% combining grasslands and shrublands)
- Wetlands (19% combining open water, emergent and woody wetlands)
- Developed areas (1%)

A significant portion of the surrounding landscape, like the WMA, is forest. Although some of the early successional lands surrounding the WMA may be considered young forest, they are likely not managed and maintained as young forest. As part of DFW's Young Forest Initiative (YFI) on WMA's, future habitat management for Little John WMA will enhance young forest across the landscape. The YFI goal of creating and maintaining 10% or more of the forested area as young forest will provide managed and maintained young forest habitat that is lacking both within the WMA and the surrounding landscape in perpetuity.

A three-mile radius from Little John WMA also includes parts of 6 other State-owned properties including Winona State Forest (9,230 acres), Tug Hill State Forest (2,829 acres), Sears Pond State Forest (2,195 acres), Stave Miller State Forest (3,127 acres) and Battle Hill State Forest (1,729 acres). State Forests may have occasional areas of young forest, but they are managed for multiple uses including water quality protection, recreation, wildlife habitat protection, and the production of forest products. WMAs differ in that they are managed to provide quality wildlife habitat and populations by promoting ecosystem health, enhancing landscape biodiversity, and protecting soil productivity and water quality. The production of forest products on WMAs is generally a byproduct of management activities related to the creation and improvement of wildlife habitat. Due to the temporary nature of young forest habitat, it is important for wildlife species that a percentage of the landscape be maintained in such an age class in perpetuity. This is not often the case on State Forests, but is a targeted goal on Little John WMA.

[6] Available online at http://www.dec.ny.gov/outdoor/104218.html.

II. MANAGEMENT STRATEGIES BY HABITAT TYPE

DEC will continue active management of wildlife habitats on Little John WMA to provide the following benefits:

- Maintain habitat characteristics that will benefit wildlife abundance and diversity within the New York landscape.
- Promote Best Management Practices for targeted wildlife and habitats.
- Provide opportunities for wildlife-dependent recreation such as trapping, hunting, and bird watching compatible with the ongoing habitat management practices and species management considerations.
- Improve habitat quality by reducing invasive species, if present and identified for treatment.

FOREST

Forested acreage includes the following forest types:

Natural forest: naturally forested acres, including hardwoods and softwoods. Includes any upland forested acreage that is not young forest, i.e., pole stands, other intermediate forest age classes, mature forest, and old growth forest.

Plantation: planted forested acres, generally planted in rows dominated by one or two species.

Forested wetland: wetland acres where forest or shrub vegetation accounts for greater than 50% of hydrophytic vegetative cover and the soil or substrate is periodically saturated or covered with water.

Young forest: young or regenerating forested acres, which are typically aged 0-10 years since a disturbance or regeneration cut, depending upon the site conditions. May include both natural forest and plantations.

Young forest (forested wetland): young, regenerating forested wetland acres.

Location of 2010 Seed-tree Cut.

Photo: Bonnie Parton, NYS DEC

Forest management on Little John WMA incorporates an approach to create and/or maintain the diversity of forest age classes that are required to support a diversity of wildlife. In 2015, DEC launched the Young Forest Initiative (YFI) to increase the amount of

young forest on WMAs to benefit wildlife that require this transitional, disturbance-dependent habitat. [7]

MANAGEMENT OBJECTIVES

- Maintain the WMA's intermediate and mature forested acreage at approximately 76% (6,035 acres) to continue to provide habitat diversity for forest species.
- Increase young forest cover from 158 acres (2% of the forested area) to 982 acres (14% of the forested area).
- Increase shrubland habitat to 49 acres.
- Increase the amount of young forest softwood cover to improve habitat for snowshoe hare and ruffed grouse.

The long-term management direction for Little John WMA is to substantially increase the early successional forest habitats on the property to improve habitat for snowshoe hare, ruffed grouse and American woodcock. Taking into account the size of the WMA, its position on the landscape relative to other managed and unmanaged lands, and its current and future potential as wildlife habitat was important when developing a young forest target percentage. Targeting a higher percentage of young forest will ensure species such as snowshoe hare that exist on the WMA currently, but are limited in distribution across the state, can thrive on the property.

While focusing on young forest target species, a host of other species are also taken into consideration when planning the size and arrangement of forest treatments. Proposed young forest will mostly be created in patches distributed over the entire WMA. Combined with retained and healthy intermediate and mature forest stands throughout the property, many species of songbird, raptors, large and small mammals, amphibians, and reptiles will also be able to utilize the WMA and surrounding landscape to a greater extent.

DESCRIPTION OF EXISTING FOREST HABITAT AND TARGET SPECIES

As shown on Table 1, 87% of the total area of Little John WMA is forested (6,907 acres). Of this, approximately 86% is natural forest (6,071 acres), 6% is plantation (409 acres), 6% is forested wetland (427 acres), and 2% is young forest (158 acres). Compared to the surrounding landscape, Little John WMA has more forest habitat but less early successional habitat (Figures 6 and 7). Table 4 provides a detailed description of the types of forest found on Little John WMA and the most common types of trees found in each.

[7] Additional information about DEC's Young Forest Initiative and the YFI Strategic Plan is available online at http://www.dec.ny.gov/outdoor/104218.html.

Table 4. Summary of the acreage and dominant overstory species for each forest type present on Little John WMA.

Forest Type	Acres (as of 2016)	Desired Acres	Overstory species
Natural forest (mature/intermediate)	6,071	5,431	Red maple, hard maple, black cherry, yellow birch, aspen, white ash, Eastern hemlock
Plantation	409	265	Norway spruce, red pine, jack pine, white pine, Scotch pine, larch
Forested wetland	427	387	Eastern hemlock, balsam fir, red maple
Young forest	158	942	
Young forest (forested wetland)	0	40	
Total Forested Acres:	7,065	7,065	

Soils on Little John WMA are of the Worth-Empeyville-Bice series. Soils typical of these series are known as being deep to very deep and moderately well-drained with a fragipan. The soils on Little John WMA support a healthy and productive forest community. [8]

Target species for young forest include snowshoe hare, American woodcock and ruffed grouse. These species rely on a mixture of intermediate and young forest habitats and by providing such variety through timber management, we can create a landscape that meets the following requirements:

- Snowshoe hare:
  - Foraging areas – In the early spring and summer, herbaceous vegetation on field edges and in small forest openings.[9] During the winter hares browse taller shrubs and young trees not covered by snowfall.[10]
  - Protective cover – Very dense woody understory, covered fields and thickets. Ideally, dense conifer stands (8-15ft tall) for daytime sanctuary from visual predators.
  - Travel cover – Conifer stands (16-50ft tall) with a moderately dense understory are used by hares at night to travel between foraging areas and protective cover.[11]
- American woodcock:
  - Singing/Peenting Ground – Open areas from 1 to >100 acres, usually in an abandoned field.

[8] Soil classification information available from: US Department of Agriculture, Natural Resources Conservation Service. Available online at http://www.nrcs.usda.gov/wps/portal/nrcs/surveylist/soils/survey/state/?stateId=NY.

[9] Brocke, R.H., R.W. Sage Jr., M.J. Tracy, R.D. Masters. 1980. Observing Snowshoe Hares in Adirondack Forest Openings and Management Implications. Final Report (in part) for W-105-R, Study X, Jobs 1,2,3 and 4. 62pp.

[10] Gilbart, M. 2012. Under Cover: Wildlife of Shrublands and Young Forest. Wildlife Management Institute. Cabot VT. 87 pp.

[11] Brocke, R.H. 1975. Preliminary Guidelines for Managing Snowshoe Hare Habitat in the Adirondacks. Trans. 32nd Northeast Fish and Wildlife Conference. New Haven, Conn. pp. 42-66.

- Daytime areas – Moist, rich soils with dense overhead cover of young alders, aspen or birch.
- Nesting – Young, open, second growth woodlands.
- Brood rearing – Similar to nesting except also including bare ground and dense ground cover.
- Roosting – Open fields (minimum of 5 acres) or blueberry fields and reverting farm fields.[12]

- Ruffed grouse
  - Drumming areas – Downed trees surrounded by small diameter woody cover
  - Foraging areas – Open areas with dense overhead cover of young forest with good mast production
  - Nesting – Young, open forest stands or second growth woodlands
  - Brood rearing – Herbaceous ground cover with high midstory stem density[13] [14]

Snowshoe hare at Kennebago Lake, Maine.

Photo: U.S. Fish and Wildlife Service

MANAGEMENT HISTORY

The earliest records of timber sales date back to 1974 (Table 5).

Table 5. Summary of forest products sold from Little John WMA.

Date of Sale	# of Sales [a]	Acres Treated	Gravel (cubic yards)	Hardwood Pulp-wood (cords)	Softwood Pulp-wood (cords)	Cabin Logs/ Red Pine Poles	Sawtimber, Thousands of Board Feet (MBF)	Value ($)[b]
1974-79	154	380	500	2,554	1,034	0	822.2	$75,807.83
1980-89	263	100	0	7,292	125	1,487	136.4	$71,722.00
1990-99	29	120	0	1,795	0	0	300.7	$23,100.00
2000-09	11	60	0	685	0	0	122	$43,693.00
2010-18	3	144	0	1,274	141	0	368.6	$88,193.80
Totals	460	804	500	13,600	1,300	1,487	1,749.9	$302,516.63

[a] There is a gap in the sales records. In 1981, 18 sales are missing information on the type, volume and value of products sold. Those 18 sales were included in the total number of sales for that time period.
[b] Value has not been adjusted to reflect inflation.

[12] US Department of Agriculture, Natural Resources Conservation Service. 2010. American Woodcock: Habitat Best Management Practices for the Northeast by Scot J. Williamson. Wildlife Insight. Washington, DC.
[13] Dessecker, D.R, G.W. Norman, and S.J. Williamson. 2006. Ruffed Grouse Conservation Plan. Association of Fish & Wildlife Agencies: Resident Game Bird Working Group. 94 pp.
[14] Jones, B.C. et al. Habitat Management of Pennsylvania Ruffed Grouse. Pennsylvania Game Commission. 10 pp.

The acres treated column in Table 5 does not reflect the acreage from any of the smaller scale timber sales (generally valued at <$10,000) due to the fact that acres were not recorded for those sales. Likely that is due to a combination of record keeping practices at the time, those sales treated small portions of larger forest stands, and most of the smaller timber sales involved small volumes of forest products.

The 1970s had the largest number of recorded acres treated in the history of the property. Those acres were the result of four large timber sales, (80-100 acres each) that also accounted for all of the sawtimber sold during that time. The remaining 150 sales were either hardwood or softwood pulpwood sold to individuals and small logging businesses. On average, each small sale involved an average of 10-20 cords of hardwood pulpwood or 50-200 cords of softwood pulpwood. This time period also saw a single sale of gravel that appears to have been a one-time event.

Between 1980-89 there was only one large timber sale, which accounted for three-quarters of the sawtimber sold during this time. The number of small pulpwood sales increased during this time, resulting in the highest number of total sales during a ten-year period for the WMA. This period also saw the only sales of cabin logs/red pine poles, which were sold in sales of 50-450 poles each to several small logging businesses.

The 1990s saw a significant decline in the total number of sales. This was mainly the result of a reduction in the number of small pulpwood sales. During the 1970s-80s there were an average of 15-25 small sales each year but during the 1990s, that dropped to an average of 3 small sales each year. No softwood pulpwood was sold during that period and the hardwood pulpwood was sold to a handful of individuals and small logging businesses. Again, there was one large timber sale in this period that accounted for most of the hardwood pulpwood and virtually all of the sawtimber sold during this time.

The trend of fewer sales continued from the 1990s up to the present time. Between 2000-2018 there were 11 small sales, (an average of 1 per year) and 3 large sales. This trend is a result of limited staffing and a high demand for forest management on other WMA's throughout Region 7.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

The following management is proposed to reach the goal 982 acres of young forest in ten years, and to maintain the WMA's intermediate and mature forested acreage at approximately 6,035 acres. In addition to the cutting to create young forest, approximately 830 acres have been selected for intermediate treatments such as thinnings and release cuts. Achieving this level of proposed management is subject to: changing timber markets, concerns over rare, threatened or endangered species, cultural/historical features of the property, wet ground conditions, or changes in level of staff and funding support.

- **Management planned for 2019-2023** (Table 6, Figures 8-11):
    - **Stand B5:** This is a northern hardwood stand with a mix of black cherry, red maple and sugar maple. This stand will be seed tree cut to create young forest (10 acres).

- **Stand B6**: This is a northern hardwood stand with a mix of red maple, yellow birch, and black cherry. This stand will be clearcut to create young forest (7 acres).
- **Stand C1**: This is a northern hardwood stand with a mix of sugar maple, red maple and black cherry. The stand will be thinned to remove low-quality trees to provide the higher quality and apple trees more room to grow. (41 acres).
- **Stand C2**: This is a Norway spruce plantation that will be shelterwood cut to encourage regeneration of spruce seedlings. The overstory trees will eventually be removed in the future when desirable regeneration has become established. The result will be young forest habitat (39 acres).
- **Stand C5**: This is a northern hardwood stand with a mix of black cherry, aspen and red maple. The stand will be clearcut to create young forest and encourage the regeneration of aspen (8 acres).
- **Stand C17**: This is a red pine – Norway spruce plantation. The red pine will be patch clearcut to create young forest and the Norway spruce will be shelterwood cut to encourage the regeneration of spruce seedlings. The overstory trees will eventually be removed in the future when desirable regeneration has become established. The result will be immediate young forest in the patch clearcut area, and future young forest in the shelterwood cut when the overstory is eventually removed. A small portion of this stand adjacent to the mowed field will be converted to shrubland (10 acres patch clearcut, 4 acres shelterwood, 1 acre shrubland).
- **Stand C18**: This is a thin strip of Norway spruce- white pine plantation. This stand will be clearcut to create young forest (11 acres).
- **Stand C21**: This is a red pine – Norway spruce plantation. This stand will have a patch clearcut to remove the red pine as well as shelterwood cut to encourage the regeneration of spruce seedlings. The overstory trees will eventually be removed in the future when desirable regeneration has become established. The result will be immediate young forest in the clearcut area, and future young forest in the shelterwood cut when the overstory is eventually removed. A small portion of this stand adjacent to the mowed field will be converted to shrubland (15 acres patch clearcut, 18 acres shelterwood, 2 acres shrubland).
- **Stand D1:** This is a red pine – white pine plantation. This stand will be seed tree cut to encourage white pine regeneration and create young forest (35 acres).
- **Stand H11:** This is a northern hardwood stand with a mix of sugar maple, yellow birch and red maple. The stand will have a combination of thinning and patch clearcuts. The thinning will remove low-quality trees to provide the higher quality trees more room to grow, and patch clearcuts will create young forest habitat (50 acres thinning, 50 acres patch clearcut).
- **Stand H30:** This is a Norway spruce plantation that will be shelterwood cut to encourage regeneration of spruce seedlings. The overstory trees will eventually be removed in the future when desirable regeneration has become established. The overstory removal will create young forest habitat (7 acres).
- **Stand H38:** This is a pioneer hardwood stand with a mix of red maple, apple, and aspen. The apple trees will be released by removing trees and brush adjacent to

each apple tree to provide them with more sunlight and more room to grow. This will encourage apple production to provide forage for wildlife (1 acre).

- **Stand I3:** This is a Norway spruce plantation that will be shelterwood cut to encourage the regeneration of spruce seedlings. The overstory trees will eventually be removed in the future when desirable regeneration has become established. The overstory removal will create young forest habitat (10 acres).
- **Stand I9:** This is a red pine plantation. This stand will be clearcut to create young forest. Softwoods such as balsam fir, spruce (red, white, Norway), and/or white pine may be planted depending upon the type and quantity of advance regeneration. (5 acres).
- **Stand I10:** This is a northern hardwood stand with a mix of sugar maple, yellow birch and red maple. The stand will have a combination of thinning and patch clearcuts. The thinning will remove low-quality trees to provide the higher quality trees more room to grow, and patch clearcuts will create young forest habitat (50 acres thinning, 50 acres patch clearcut).
- **Stand J3:** This is a northern hardwood stand with a mix of yellow birch, sugar maple and red maple. The stand will have a combination of thinning and patch clearcuts. The thinning will remove low-quality trees to provide the higher quality trees more room to grow, and patch clearcuts will create young forest habitat (50 acres thinning, 50 acres patch clearcut).
- **Stand J7:** This is a Scotch pine - Norway spruce plantation that will be shelterwood cut to encourage regeneration of spruce seedlings. The overstory trees will eventually be removed in the future when desirable regeneration has become established. The overstory removal will create young forest habitat (16 acres).
- **Stand J13** This is a red pine plantation that will be clearcut to create young forest habitat. Softwoods such as balsam fir, spruce (red, white, Norway), and/or white pine may be planted depending upon the type and quantity of advance regeneration (8 acres).
- **Stands J20 and J21:** These are Norway spruce plantations that will be shelterwood cut to encourage regeneration of spruce seedlings. The overstory trees will eventually be removed in the future when desirable regeneration has become established. The overstory removal will create young forest habitat (24 acres).
- **Stand K1:** This is a northern hardwood stand with a mix of yellow birch, red maple and sugar maple. The stand will have a combination of thinning and patch clearcuts. The thinning will remove low-quality trees to provide the higher quality trees more room to grow, and patch clearcuts will create young forest habitat (50 acres thinning, 50 acres patch clearcut).
- **Stand K4:** This is a northern hardwood stand with a mix of black cherry, red maple, and yellow birch. This stand will be patch clearcut to create young forest (20 acres).
- **Stand K6** This is a northern hardwood stand with a mix of sugar maple, red maple, and yellow birch. The stand will have a combination of thinning and patch clearcuts. The thinning will remove low-quality trees to provide the higher quality

trees more room to grow, and patch clearcuts will create young forest habitat (50 acres thinning, 50 acres patch clearcut).

- **Stand K7:** This is a forested wetland stand containing eastern hemlock, balsam fir and red maple. The stand will be patch clearcut/strip cut to encourage the regeneration of balsam fir. (40 acres).
- **Stand K9:** This is a Norway spruce plantation that will be shelterwood cut to encourage the regeneration of spruce seedlings. The overstory trees will eventually be removed in the future when desirable regeneration has become established. The overstory removal will create young forest habitat (17 acres).

- **Management planned for 2024-2028** (Table 7, Figures 8-11):

  - **Stand A2:** This is a Norway spruce plantation with some jack pine that will be shelterwood cut to encourage the regeneration of spruce seedlings. The overstory trees will eventually be removed in the future when desirable regeneration has become established. The overstory removal will create young forest habitat (9 acres).
  - **Stand A3:** This is a jack pine plantation that also contains a mix of black cherry and white ash. The stand will be thinned to remove jack pine and low-quality trees to provide the higher quality trees more room to grow (8 acres).
  - **Stand E3:** This is a northern hardwood stand with a mix of red maple, sugar maple and black cherry. This stand will be seed tree cut to create young forest (25 acres).
  - **Stand F2:** This is a Norway spruce plantation that will be shelterwood cut to encourage regeneration of spruce seedlings. The overstory trees will eventually be removed in the future when desirable regeneration has become established. The overstory removal will create young forest habitat (21 acres).
  - **Stand F3:** This is a red pine plantation. This stand will be clearcut to create young forest. Softwoods such as balsam fir, spruce (red, white, Norway), and/or white pine may be planted depending upon the type and quantity of advance regeneration (1 acre).
  - **Stand G3:** This is a red pine plantation with some Scotch pine. This stand will be clearcut to create young forest. Softwoods such as balsam fir, spruce (red, white, Norway), and/or white pine may be planted depending upon the type and quantity of advance regeneration (11 acres).
  - **Stand G13.2:** This is a Norway spruce plantation that was shelterwood cut. If desirable regeneration has developed sufficiently, this stand will be clearcut to remove the overstory and create young forest (8 acres).
  - **Stand H11:** This is a northern hardwood stand with a mix of sugar maple, yellow birch and red maple. The stand will again have a combination of thinning and patch clearcuts. The thinning will remove low-quality trees to provide the higher quality trees more room to grow, and patch clearcuts will create young forest habitat (50 acres thinning, 50 acres patch clearcut).

- **Stand H16:** This is a pioneer hardwood stand with a mix of black cherry, red maple and sugar maple. This stand will be seed tree cut to create young forest (22 acres).
- **Stand H17:** This is a red pine plantation. This stand will be clearcut to create young forest. Softwoods such as balsam fir, spruce (red, white, Norway), and/or white pine may be planted depending upon the type and quantity of advance regeneration (2 acres).
- **Stand H18:** This is a Scotch pine- larch plantation. This stand will be clearcut to create young forest. Softwoods such as balsam fir, spruce (red, white, Norway), and/or white pine may be planted depending upon the type and quantity of advance regeneration (18 acres).
- **Stand H40:** This is a northern hardwood stand with a mix of sugar maple, yellow birch and red maple. The stand will be thinned to remove low-quality trees to provide the higher quality trees more room to grow. The stand will also have patch clearcuts to create young forest habitat (72 acres thinning, 60 acres patch clearcut)
- **Stand I6:** This is a northern hardwood stand with a mix of black cherry, red maple, and sugar maple. The stand will be thinned to remove low-quality trees to provide the higher quality trees more room to grow (26 acres).
- **Stand I10:** This is a northern hardwood stand with a mix of sugar maple, yellow birch and red maple. The stand will again have a combination of thinning and patch clearcuts. The thinning will remove low-quality trees to provide the higher quality trees more room to grow, and patch clearcuts will create young forest habitat (50 acres thinning, 50 acres patch clearcut).
- **Stand I23:** This is a northern hardwood stand with a mix of yellow birch, black cherry and red maple. The stand will be thinned to remove low-quality trees to provide the higher quality trees more room to grow (51 acres).
- **Stand J3:** This is a northern hardwood stand with a mix of yellow birch, sugar maple and red maple. The stand will again have a combination of thinning and patch clearcuts. The thinning will remove low-quality trees to provide the higher quality trees more room to grow, and patch clearcuts will create young forest habitat (50 acres thinning, 50 acres patch clearcut).
- **Stand K1:** This is a northern hardwood stand with a mix of yellow birch, red maple and sugar maple. The stand will again have a combination of thinning and patch clearcuts. The thinning will remove low-quality trees to provide the higher quality trees more room to grow, and patch clearcuts will create young forest habitat (50 acres thinning, 50 acres patch clearcut).
- **Stand K6:** This is a northern hardwood stand with a mix of sugar maple, red maple, and yellow birch. The stand will again have a combination of thinning and patch clearcuts. The thinning will remove low-quality trees to provide the higher quality trees more room to grow, and patch clearcuts will create young forest habitat (50 acres thinning, 50 acres patch clearcut).
- **Stand K8:** This is a northern hardwood stand with a mix of yellow birch, red maple, and sugar maple. This stand will be patch clearcut to create young forest (10 acres).

- **Stand K11:** This is a northern hardwood hemlock stand with a mix of eastern hemlock, red maple, and yellow birch. This stand will be thinned to remove low-quality trees to provide the higher quality trees more room to grow (130 acres)

In Tables 6 and 7 the total acres of each stand are listed in the 'Acres' column. In this plan the entire area of each stand is planned to be treated unless otherwise noted under 'Treatment Type' column. For example, stand B5 has a total size of 13 acres but we only plan to treat 10 acres during this plan period.

Table 6. Forest management schedule for the first five-year period of this HMP (2019-2023).

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
B5	13	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood-	Natural Forest: Seedling/Sapling	Even Aged	Seed Tree (10 acres)
B6	7	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood-	Natural Forest: Seedling/Sapling	Even Aged	Clearcut
C1	41	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/Sapling	Uneven Aged	Thinning and Apple Release
C2	39	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/Sapling	Uneven Aged	Shelterwood
C5	8	Pole Timber 6"-11" DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/Sapling	Even Aged	Clearcut
C17	15	Small Sawtimber 12"-18" DBH	Plantation: Red Pine, Norway Spruce	Natural Forest: Seedling/Sapling Shrubland	Even and Uneven Aged	Patch Clearcut (10acres) Shelterwood (4 acres) Shrubland (1 acre)
C18	11	Small Sawtimber 12"-18" DBH	Plantation: White Pine, Norway Spruce	Natural Forest: Seedling/Sapling	Even Aged	Clearcut
C21	35	Small Sawtimber 12"-18" DBH	Plantation: Red Pine, Norway Spruce	Natural Forest: Seedling/Sapling Shrubland	Even and Uneven Aged	Patch Clearcut (15 acres) Shelterwood (18 acres) Shrubland (2 acres)
D1	35	Small Sawtimber 12"-18" DBH	Plantation: Red Pine, White Pine	Natural Forest: Seedling/Sapling	Even Aged	Seed Tree
H11	460	Small Sawtimber 12"-18" DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/Sapling and Natural Forest: Northern Hardwood	Even and Uneven Aged	Patch Clearcut (50 acres, and Thinning (50 acres)
H30	7	Small Sawtimber 12"-18" DBH	Plantation: Norway Spruce	Natural Forest: Seedling/Sapling	Uneven Aged	Shelterwood

Table 6 cont.

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
H38	1	Pole Timber 6”-11” DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/Sapling	Even Aged	Apple Release
I1	8	Small Sawtimber 12”-18” DBH	Plantation: Norway Spruce	Shrubland	Even Aged	Clearcut
I3	10	Small Sawtimber 12”-18” DBH	Plantation: Norway Spruce	Natural Forest: Seedling/Sapling	Uneven Aged	Shelterwood
I9	5	Small Sawtimber 12”-18” DBH	Plantation: Red Pine	Natural Forest: Seedling/Sapling	Even Aged	Clearcut
I10	643	Small Sawtimber 12”-18” DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/Sapling and Natural Forest: Northern Hardwood	Even and Uneven Aged	Patch Clearcut (50 acres), and Thinning (50 acres)
J3	537	Small Sawtimber 12”-18” DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/Sapling and Natural Forest: Northern Hardwood	Even and Uneven Aged	Patch Clearcut (50 acres), and Thinning (50 acres)
J7	16	Small Sawtimber 12”-18” DBH	Plantation: Scotch Pine, Norway Spruce	Natural Forest: Seedling/Sapling	Uneven Aged	Shelterwood
J13	8	Small Sawtimber 12”-18” DBH	Plantation: Red Pine	Natural Forest: Seedling/Sapling	Even Aged	Clearcut
J20	15	Small Sawtimber 12”-18” DBH	Plantation: Norway Spruce	Natural Forest: Seedling/Sapling	Uneven Aged	Shelterwood
J21	9	Small Sawtimber 12”-18” DBH	Plantation: Norway Spruce	Natural Forest: Seedling/Sapling	Uneven Aged	Shelterwood
K1	246	Pole Timber 6”-11” DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/Sapling and Natural Forest: Northern Hardwood	Even and Uneven Aged	Patch Clearcut (50 acres), and Thinning (50 acres)
K4	52	Pole Timber 6”-11” DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/Sapling	Even Aged	Patch Clearcut (20 acres)
K6	549	Pole Timber 6”-11” DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/Sapling and Natural Forest: Northern Hardwood	Even and Uneven Aged	Patch Clearcut (50 acres), and Thinning (50 acres)
K7	83	Pole Timber 6”-11” DBH	Forested Wetlands: Spruce-Fir-Hemlock-WP	Forested Wetlands: Spruce-Fir-Hemlock-WP and Natural Forest: Seedling/Sapling	Even Aged	Patch Clearcut (40 acres)

Table 7. Forest management schedule for the second five-year period of this HMP (2024-2028).

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
A2	9	Small Sawtimber 12”-18” DBH	Plantation: Norway Spruce	Natural Forest: Seedling/Sapling	Even Aged	Shelterwood
A3	11	Pole Timber 6”-11” DBH	Plantation: Jack Pine	Natural Forest: Northern Hardwood	Uneven Aged	Thinning (8 acres)
E3	28	Pole Timber 6”-11” DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/Sapling	Even Aged	Seed Tree (25 Acres)
F2	21	Small Sawtimber 12”-18” DBH	Plantation: Norway Spruce	Natural Forest: Seedling/Sapling	Uneven Aged	Shelterwood
F3	1	Small Sawtimber 12”-18” DBH	Plantation: Red Pine	Natural Forest: Seedling/Sapling	Even Aged	Clearcut
G3	11	Small Sawtimber 12”-18” DBH	Plantation: Red Pine	Natural Forest: Seedling/Sapling	Even Aged	Clearcut
G13.2	8	Small Sawtimber 12”-18” DBH	Plantation: Norway Spruce	Natural Forest: Seedling/Sapling	Even Aged	Clearcut
H11	460	Small Sawtimber 12”-18” DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/Sapling and Natural Forest: Northern Hardwood	Even and Uneven Aged	Patch Clearcut (50 acres), and Thinning (50 acres)
H16	22	Small Sawtimber 12”-18” DBH	Natural Forest: Pioneer Hardwood	Natural Forest: Seedling/Sapling	Even Aged	Seed Tree
H17	2	Small Sawtimber 12”-18” DBH	Plantation: Red Pine	Natural Forest: Seedling/Sapling	Even Aged	Clearcut
H18	18	Small Sawtimber 12”-18” DBH	Plantation: Scotch Pine - Larch	Natural Forest: Seedling/Sapling	Even Aged	Clearcut
H40	132	Small Sawtimber 12”-18” DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/Sapling and Natural	Even and Uneven Aged	Patch Clearcut (50 acres), and Thinning (50 acres)
I2	9	Pole Timber 6”-11” DBH	Natural Forest: Pioneer Hardwood	Shrubland	Even Aged	Clearcut
I6	26	Small Sawtimber 12”-18” DBH	Natural Forest: Northern Hardwood	Natural Forest: Northern Hardwood	Uneven Aged	Thinning
I10	643	Small Sawtimber 12”-18” DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/Sapling and Natural Forest: Northern Hardwood	Even and Uneven Aged	Patch Clearcut (50 acres), and Thinning (50 acres)

Table 7 cont.

Stand	Acres	Size Class	Forest Type		Management Direction	Treatment Type
			Current	Future		
I23	51	Pole Timber 6”-11” DBH	Natural Forest: Northern Hardwood	Natural Forest: Northern Hardwood	Uneven Aged	Thinning
J3	537	Small Sawtimber 12”-18” DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/Sapling and Natural Forest: Northern Hardwood	Even and Uneven Aged	Patch Clearcut (50 acres), and Thinning (50 acres)
K1	246	Pole Timber 6”-11” DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/Sapling and Natural Forest: Northern Hardwood	Even and Uneven Aged	Patch Clearcut (50 acres), and Thinning (50 acres)
K6	549	Pole Timber 6”-11” DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/Sapling and Natural Forest: Northern Hardwood	Even and Uneven Aged	Patch Clearcut (50 acres), and Thinning (50 acres)
K8	176	Small Sawtimber 12”-18” DBH	Natural Forest: Northern Hardwood	Natural Forest: Seedling/Sapling	Even Aged	Patch Clearcut (10 acres)
K11	163	Small Sawtimber 12”-18” DBH	Natural Forest: Northern Hardwood Hemlock	Natural Forest: Northern Hardwood Hemlock	Uneven Aged	Thinning (130 acres)

BEST MANAGEMENT PRACTICES

Forest management on all WMAs follows Best Management Practices to protect soil and water resources, promote quality wildlife habitat, and establish healthy forests (Table 8).

Table 8. Best Management Practices for forest management on WMAs.

Resource	Guidance Document [15]
Soils	*Rutting Guidelines for Timber Harvesting on Wildlife Management Areas*
Water quality	*NYS Forestry Best Management Practices for Water Quality*
Wildlife	*Retention Guidance on Wildlife Management Areas*
Plantations	*Plantation Management Guidance on Wildlife Management Areas*

Wildlife Considerations:

In general, forest management from April-July will be kept to a minimum to avoid bark-slip season, avoid what are typically wet ground conditions, and minimize negative impacts to a host of forest-dwelling wildlife that is breeding and rearing young during those months. However, some areas of Little John WMA may be managed during the summer and fall due to

[15] All guidance documents referenced here are available online at http://www.dec.ny.gov/outdoor/104218.html.

inaccessibility during the winter because of the seasonal nature of the roads. Given that large parts of the property are accessible only by forest roads and those roads are likely impassable during late winter months due to significant snow, logging and contractor access to the core areas of the property may only be an option during the summer and fall months. Timber management on trees greater than three-inch diameter at breast height (DBH) will be restricted to October 1 through March 31 unless acoustic surveys are conducted to survey for presence of protected bat species at the work locations. If species such as Northern long-eared bat and tri-colored bat are not found to be using project sites, the seasonal restrictions can be modified. While not yet listed, tri-colored bat is likely to be listed in the near future and we will add extra precautions to sites found to have this species.

Given the WMA's dense and expansive forests, it is a known location for nesting forest-dwelling raptors. These species utilize a mix of mature hardwood/coniferous forest, while frequenting other stands for feeding. With responsible forest management, additional young forest acreage will provide healthy populations of small mammals in close proximity to more mature forests. Thinning and selective harvest of mature forests can also benefit these forest raptors by increasing understory growth while maintaining large nesting trees and an intact yet thinned canopy. Many times, red-shouldered hawks for instance prefer very wet locations for their nest sites, and with the nature of logging, those particular sites may not overlap with proposed management. Pre-harvest surveys using acoustic call-back techniques may be used to determine current use of a project area by raptors. With or without surveys, if an active nest is located within a project site, the nest can be buffered from cutting operations, or the project may be suspended until nesting is complete. Many of the other forest species of concern likely to be present on Little John WMA will likely benefit from the increased forest diversity the young forest project can create. While they may not nest in young forest, many species use freshly cut areas to feed on the abundant vegetation and resulting invertebrate populations. Maintaining a healthy percentage of both mature and young forest ensures habitat is available for a variety of species throughout the year.

Snowshoe Hare Tracks

Photo: NYSDEC

Forest Health Considerations:

In stands where native and non-native vegetation has been identified as interfering with desirable regeneration, additional treatments of that interfering vegetation may be required to promote the development of desired regeneration. Currently, major insect pests such as Asian longhorn beetle (ALB) or emerald ash borer (EAB) are not known to occur on Little John WMA. However, EAB has become established in New York State and its population continues to expand. The closest know occurrence of EAB is in nearby Onondaga County. It is likely that EAB could eventually become established at Little John WMA. If that occurs, the plan will be amended to reflect that

new development and any additional amendments (such as changing the implementation plan and anticipated schedule) will depend on the scope and severity of the infestation. Currently, managers to take into consideration the likelihood of an EAB infestation when preparing timber sales and generally tend to mark many, if not all, ash trees for cutting in the sale areas when possible. DEC staff will continually monitor for invasive pests and will utilize adaptive management when necessary.

Pre- and Post-treatment Considerations:

Where invasive and other undesirable plant species are significantly abundant, pre-treatment mechanical cutting or herbicide application may be necessary. If it is determined that deer browse is intense enough to prevent regeneration of desired tree species, fencing of the treatment areas may be necessary. Also, if it is concluded post-treatment that desired tree species are not regenerating in a high enough frequency, or that undesirable species are dominating the area and suppressing regeneration, the stand may be re-treated. This may include mechanical and/or chemical control of undesirable species, removal of additional trees to increase available sunlight, scarification of the forest floor to stimulate seedling establishment, and/or the direct seeding or planting of desired tree species. Pre- and post-treatment actions to promote the desired forest regeneration will be addressed in detail in the silvicultural prescriptions.

MANAGEMENT EVALUATION

In order to determine whether the desired forest regeneration and wildlife response(s) have been achieved by the management outlined above, pre- and post-management assessments will be conducted in accord with guidelines that are established in the Young Forest Initiative Monitoring Plan[16]. The Monitoring Plan establishes statewide standards for evaluating vegetation and target wildlife responses to forest management to determine if the outcome is as prescribed. Regeneration assessments will be conducted within one year of harvest completion, three, and five years after the harvest or until the forester determines adequate natural or artificial (i.e., planting) regeneration has been securely established. YFI wildlife target species selected for Little John WMA, which may be assessed to determine response to management, include:

- American woodcock
- Ruffed grouse
- Snowshoe hare

Songbird surveys may also be used semi-annually to monitor how species utilize and respond to managed locations before and after the work is completed. Acoustic bat surveys may be used to detect presence of bat species in decline so that project plans can be amended to best protect those individuals and their habitats. Forest dwelling raptors may also be surveyed as needed and able to track their use of newly managed lands and avoid unnecessary disturbance to nesting locations during critical times of the year. Non-YFI target species of both young forest and mature forest habitats that will benefit by creating young forest and a more diverse forest on Little John WMA include:

- Northern goshawk, red-shouldered hawk, broad-winged hawk
- Northern long-eared bat, tri-colored bat, little brown bat
- Black-throated blue warbler, wood thrush, scarlet tanager
- Brown thrasher, Canada warbler, eastern towhee

[16] The Young Forest Initiative Monitoring Plan is available online at http://www.dec.ny.gov/outdoor/104218.html.

SHRUBLAND

Shrublands are early successional habitats dominated by woody plants typically less than ten feet tall with scattered open patches of grasses and forbs that provide floristic diversity. Typically characterized by >50% cover of shrubs and <25% canopy cover of trees.

DESCRIPTION OF EXISTING SHRUBLAND HABITAT AND TARGET SPECIES

Currently, there is 1 acre of managed shrubland on Little John WMA. Additional shrubland habitat exists in wetland areas and along drainages and these shrublands have been included in the Wetland (natural) cover type in this plan.

MANAGEMENT HISTORY

To date, there has been so significant management of shrubland habitat on this property.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2019-2028** (Figures 8-11):
  - **Stand B950:** Maintain as needed through various treatments including but not limited to brush mowing, forestry mowing, tree cutting, invasive species control, and shrub planting (1 acre).
  - **Stands I1 and I2:** Convert to shrubland (17 acres).
  - **Stands C10, C16, C17, C18, C21, I10, and J12:** Convert to shrubland a portion of these stands that are adjacent to open fields to create transition zones around field edges (31 acres).

BEST MANAGEMENT PRACTICES

- Monitor for invasive plant species.

MANAGEMENT EVALUATION

Shrubland can be assessed through routine inspection to prevent colonization by mature forest species. Evaluation will be based on success of newly established shrub species and the wildlife response to those areas.

GRASSLAND AND OTHER OPEN SPACE

Grasslands are open, grassy areas with a minimal amount of shrub and tree cover (<35%) that are maintained, or could be maintained, without significant brush cutting. Grassland management will restore and maintain habitat that will be used by migratory birds as well as contribute to the goal of building self-sustaining grassland bird populations. In the case of Little John WMA, open areas do not meet the standards in size or composition to benefit grassland-dependent species. Areas on the WMA that are described in this section are maintained as forest openings and edge habitat for species that benefit from habitat diversity.

MANAGEMENT OBJECTIVES

- Maintain the existing 13 acres of grassland habitat through rotational mowing and/or prescribed fire.
- Monitor for invasive plant species.

DESCRIPTION OF EXISTING GRASSLAND HABITAT AND TARGET SPECIES

There are currently 13 acres of grassland/open space habitat in a total of 7 stands. Areas vary in size from <1 acre to just under 3 acres. These areas are maintained as small forest openings to create some edge habitat and provide some level of diversity in an otherwise forested area. These areas benefit species such as white-tailed deer, wild turkey and various songbirds that utilize small forest openings for feeding and brooding young.

Ruffed Grouse Dusting

Photo: Bonnie Parton, NYSDEC

MANAGEMENT HISTORY

Open space habitats at Little John WMA have been managed by rotary mowing.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2019-2028** (Figures 8-11):
  - **Stands C940, C941, C942, I940, I941, J940, J941:** Maintain as needed through rotational mowing. Establish and maintain feathered edges along field margins by removing trees and brush around field edges.

BEST MANAGEMENT PRACTICES

- Monitor for invasive plant species.

MANAGEMENT EVALUATION

Evaluation of grassland habitat or the species using them is not planned at this time.

AGRICULTURAL LAND

Agricultural lands on WMAs include any acreage on which crops are grown, primarily areas that are under cooperative agreements or farming contracts, but also including wildlife food plots.

DESCRIPTION OF EXISTING AGRICULTURAL LANDS AND TARGET SPECIES

There are no managed agricultural lands on Little John WMA at this time and there is no plan to create such habitats.

WETLANDS (NATURAL AND IMPOUNDED)

Natural wetlands are areas where the soil or substrate is periodically saturated or covered with water, including emergent (perennial herbaceous vegetation accounts for >50% of hydrophytic vegetative cover) and scrub-shrub wetlands (woody vegetation under 20 feet tall accounts for >50% of hydrophytic vegetative cover). Impounded wetlands are areas similar to natural wetlands, but where water is held back by a berm, road, or other structure. Forested wetlands are addressed in the Forest section above.

MANAGEMENT OBJECTIVES

- Maintain the current acreage of quality wetlands (652 acres).
- Monitor for and treat invasive vegetation.

DESCRIPTION OF EXISTING WETLAND HABITAT AND TARGET SPECIES

Presently there are 652 acres of natural wetlands. Nineteen wetlands are regulated by Article 24 of the Environmental Conservation Law and multiple additional wetlands are shown on the National Wetlands Inventory. Wetlands classified as freshwater ponds, lacustrine, and riverine are considered open water habitat types in this plan and are further discussed in that section.

Beaver Impoundment

Photo: Bonnie Parton, NYSDEC

The wetlands provide habitat for species such as:

- Beaver, mink, otter
- Mallard, American black duck, wood duck
- Wood turtle, snapping turtle, painted turtle

MANAGEMENT HISTORY

Prior to state ownership, there were two sawmills located on the property. Dams (impoundments) were created to hold water to power the mill. One structure was located on Raystone Creek (Stand 920, compartment 2) near the northern boundary line of the WMA and the other was located near the intersection of Blount Mills and Bice Roads. These structures are no longer functional and the only items visible today are the partial stone building foundations associated with the Raystone Creek impoundment and a sawdust pile located near the intersection of Blount Mills and Bice Roads.

The only other record of an impoundment on this WMA is a reconnaissance survey for a dam site that was conducted along the north-western edge of the DEC owned Bice Road. Initially identified as a post-war project, the site was later not recommended for development.

Phragmites (*Phragmites australis*/Common reed) has been treated with herbicide beginning in 2013 through a partnership with the St. Lawrence-Eastern Lake Ontario Partnership for Regional Invasive Species Management (SLELO PRISM). A total of 0.4 acre was treated in 2013 and 2014 within multiple patches that occur in stands H11, J3, K4 and K8. After two years of treatment, these patches of Phragmites were eradicated. Any other significant patches of invasive plants that are found on the property will be treated as they are found.

Implementation Plan and Anticipated Schedule

- **Management planned for 2019-2028** (Figures 8-11): Maintain the current wetlands (652 acres).
- Monitor for future invasive plant occurrences and implement applicable control measures.

Best Management Practices

- Protect wetlands from runoff and sedimentation.
- To the extent possible, avoid use of pesticides in surrounding areas.

Management Evaluation

DEC staff will conduct routine monitoring to ensure habitats are sound.

Open Water (Waterbodies and Watercourses)

Open water is defined as any area of open water, generally with less than 25% cover of vegetation or soil and typically named (e.g., Perch Lake, South Colwell Pond).

Description of Existing Open Water Habitat and Target Species

Portions of Skinner Creek, Bear Creek, Little Sandy Creek, Raystone Creek, Fox Creek, Cottrell Creek, Gillman Creek, Beaver Creek, and Mad River pass through Little John WMA. In addition, there are 20 areas (stands) of natural ponds totaling 90 acres. These ponds provide habitat for species such as:

- Hooded merganser, great blue heron, belted kingfisher
- Painted turtle, snapping turtle
- Mink

Raystone Creek

Photo: Bonnie Parton, NYSDEC

MANAGEMENT HISTORY

At this time, no records have been found in regard to open water management at Little John WMA. Water levels are influenced by natural processes, including beaver dams.

IMPLEMENTATION PLAN AND ANTICIPATED SCHEDULE

- **Management planned for 2019-2028** (Figures 8-11):
  - **Stands A910, B910, C910, C911, C912, C913, E910, G910, G911, H910, H911, H912, H913, H914, H915, H916, I910, I911, J910, and K910:** Maintain the current acreage and quality of natural ponds (90 acres).
  - Monitor and control invasive plants as needed.

BEST MANAGEMENT PRACTICES

- Protect ponds from runoff and sedimentation.
- To the extent possible, avoid use of pesticides in surrounding areas.

HABITAT MANAGEMENT SUMMARY

In summary, Table 9 lists the habitat management actions planned for Little John WMA over the next ten years. Any substantive changes will be appended to this HMP annually or as needed (Appendix D).

Table 9. Summary of habitat management actions recommended for Little John WMA, 2019-2028. (Also see Figures 8-11)

Habitat	Management Action	Acres	Timeframe
Forest	Seed tree cut stands B5 and D1.	45	2019-2023
Forest	Clearcut stands B6, C5, C18, I9, and J13.	39	2019-2023
Forest	Thin stands C1, H11, I10, J3, K1, and K6.	291	2019-2023
Forest	Shelterwood cut stands C2, C17, C21, H30, I3, J7, J20, J21, and K9.	134	2019-2023
Forest	Patch clearcut stands C17, C21, H11, I10, J3, K1, K4, K6, and K7.	338	2019-2023
Forest	Apple release stands C1 and H38.	42	2019-2023
Forest	Shelterwood cut stands A2 and F2.	30	2024-2028

Table 9 cont.			
Forest	Thin stands A3, H11, H40, I6, I10, I23, J3, K1, K6, and K11.	489	2024-2028
Forest	Seed tree cut stand E3 and H16.	47	2024-2028
Forest	Clearcut stands F3, G3, G13.2, H17, and H18.	40	2024-2028
Forest	Patch clearcut stands H11, H40, I10, J3, K1, K6, and K8.	310	2024-2028
Shrubland	Maintain stand B950 as needed.	1	2019-2028
Shrubland	Convert stands I1 and I2 to shrubland and maintain as needed.	17	2019-2028
Shrubland	Convert to shrubland a portion of stands C10, C16, C17, C18, C21, I10, and J12 that are adjacent to open fields to create transition zones around field edges	31	2019-2028
Grassland	Maintain stands C940, C941, C942, I940, I941, J940, and J941 as needed and establish feathered edges.	13	2019-2028

III. FIGURES

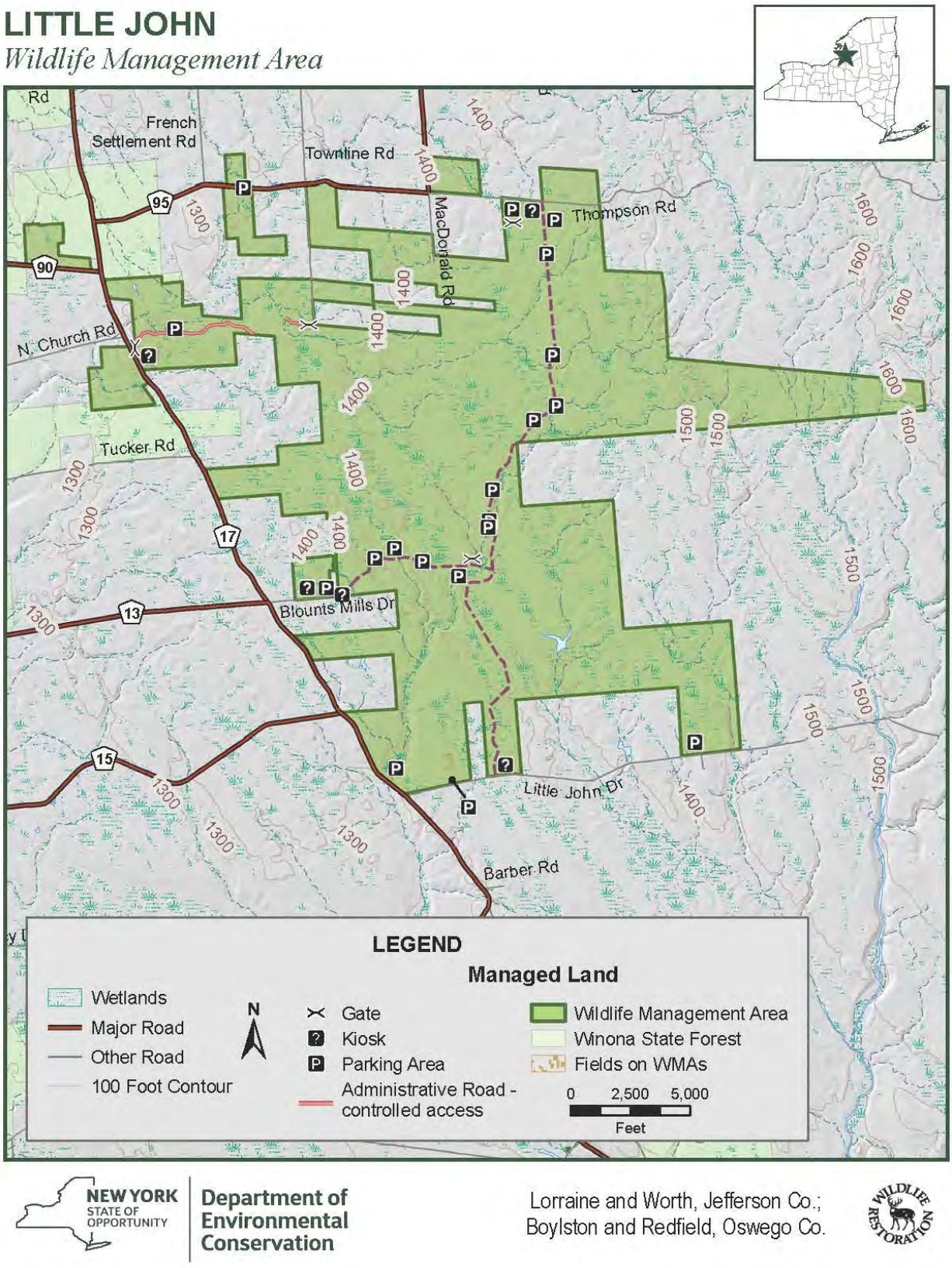


FIGURE 1. Location and access features at Little John WMA.

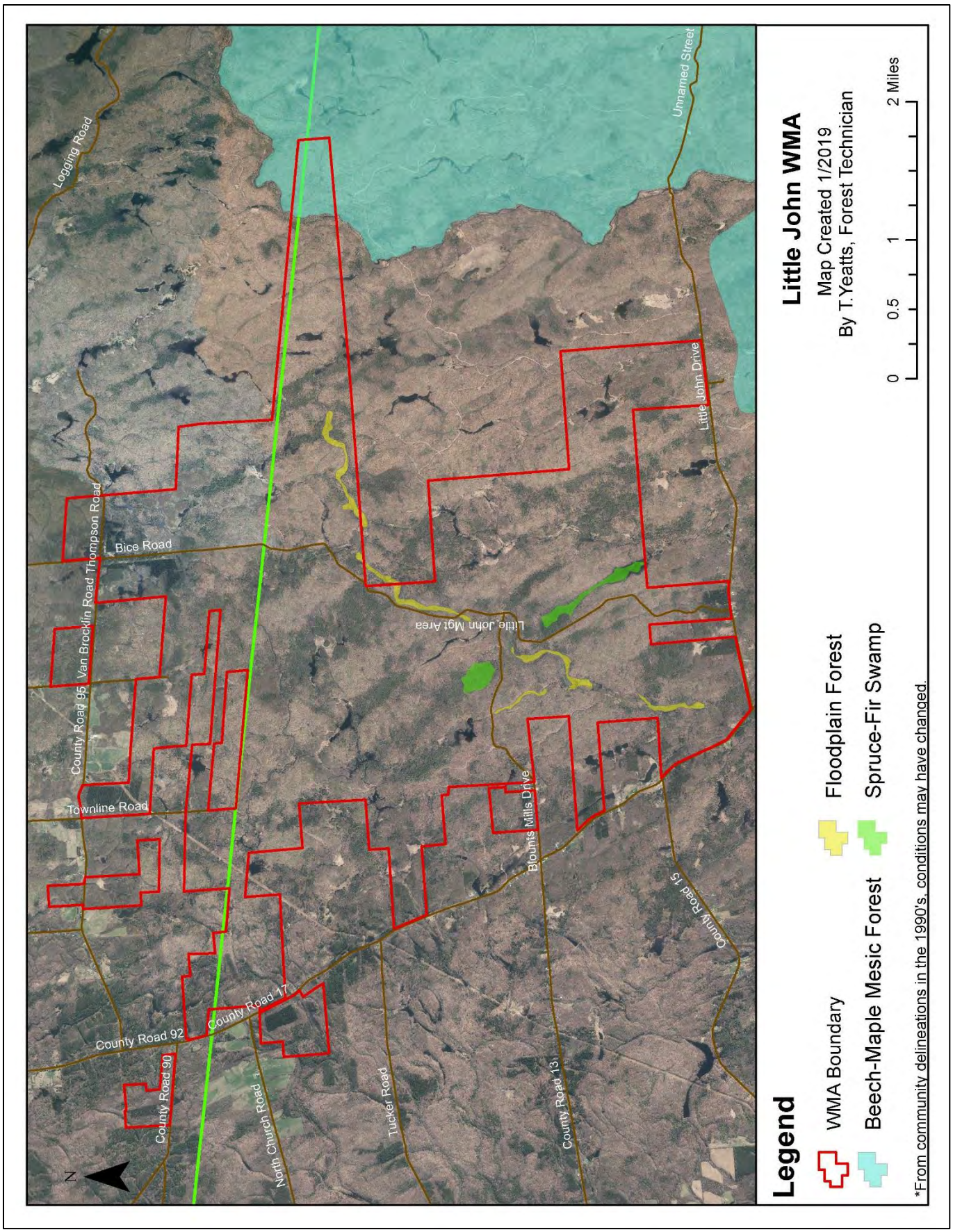


FIGURE 2. Significant ecological communities on Little John WMA. Data from the NY Natural Heritage Program.

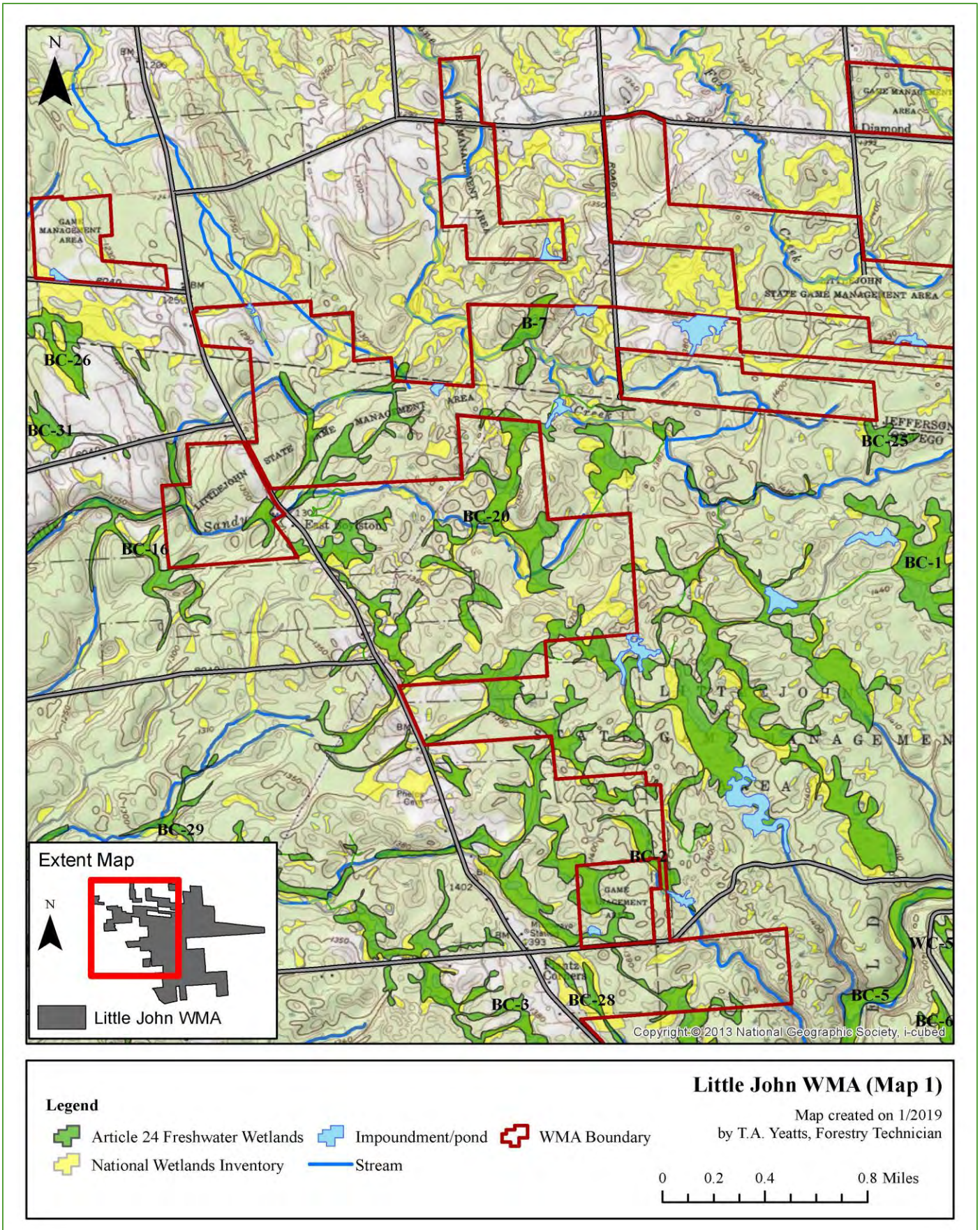


FIGURE 3. Wetlands, open water, and streams of Little John WMA (Map 1 of 3, Northwest). Note: Wetland boundaries are not exact and may not be used for regulatory purposes without a current delineation.

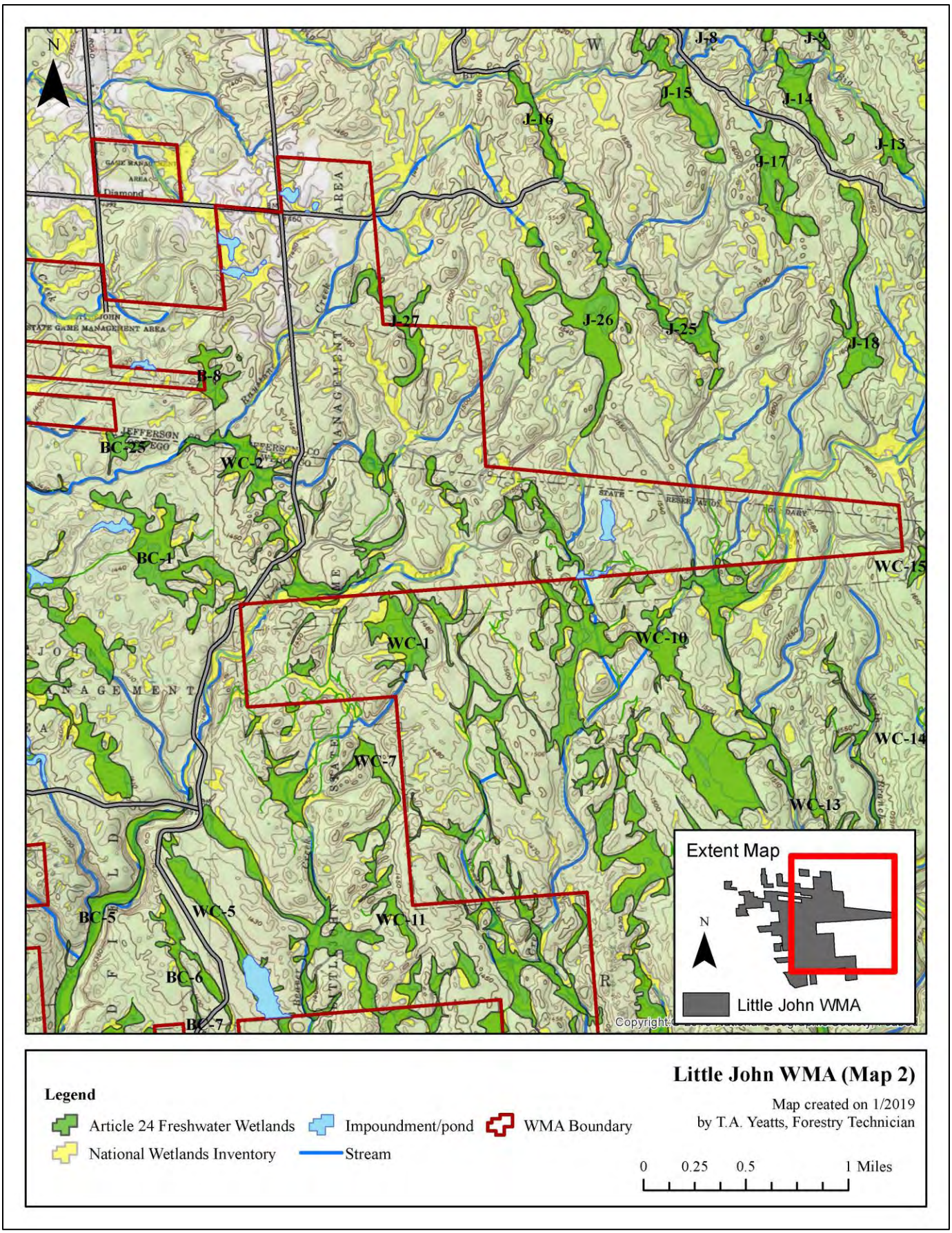


FIGURE 4. Wetlands, open water, and streams of Little John WMA (Map 2 of 3, Northeast). Note: Wetland boundaries are not exact and may not be used for regulatory purposes without a current delineation.

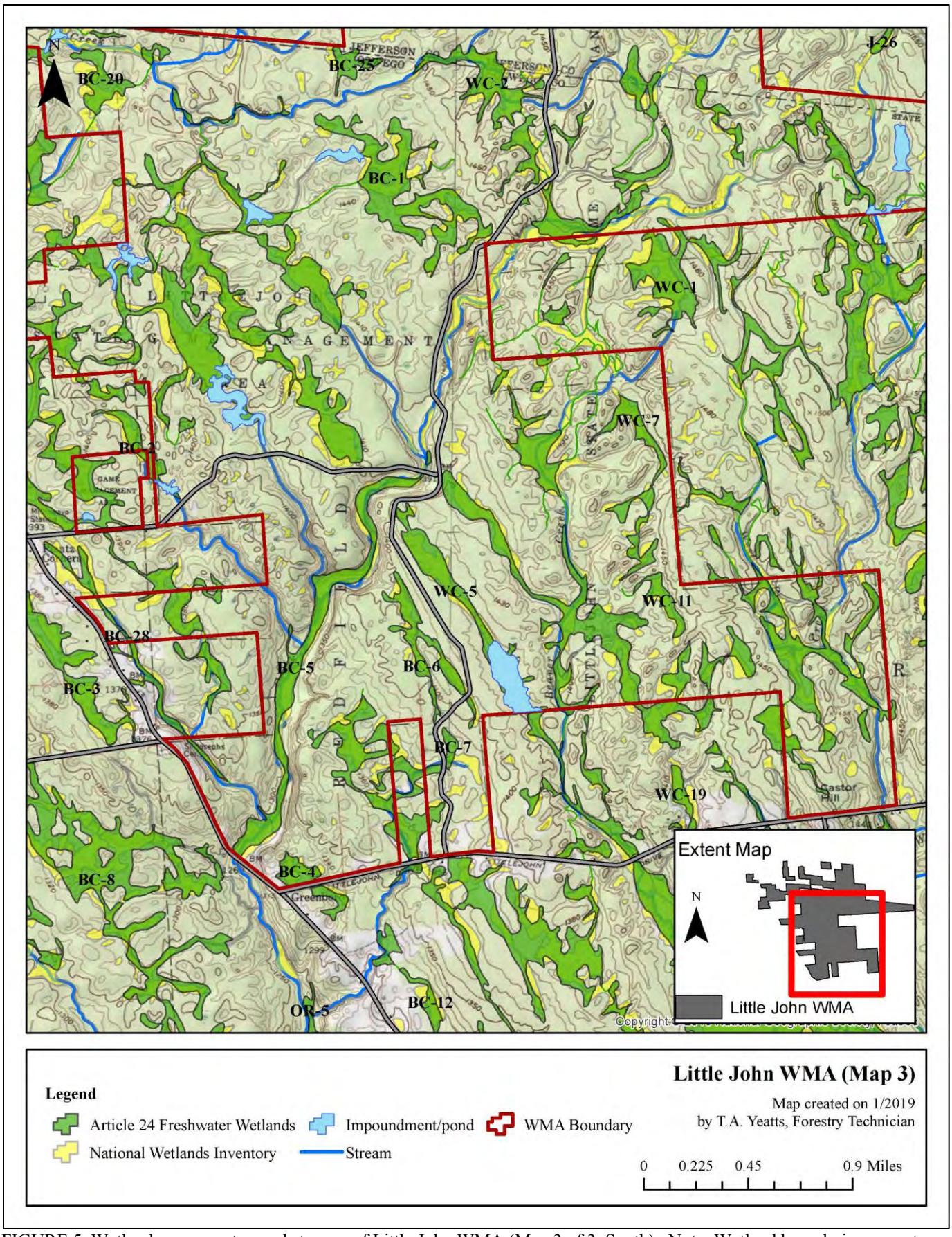


FIGURE 5. Wetlands, open water, and streams of Little John WMA (Map 3 of 3, South). Note: Wetland boundaries are not exact and may not be used for regulatory purposes without a current delineation.

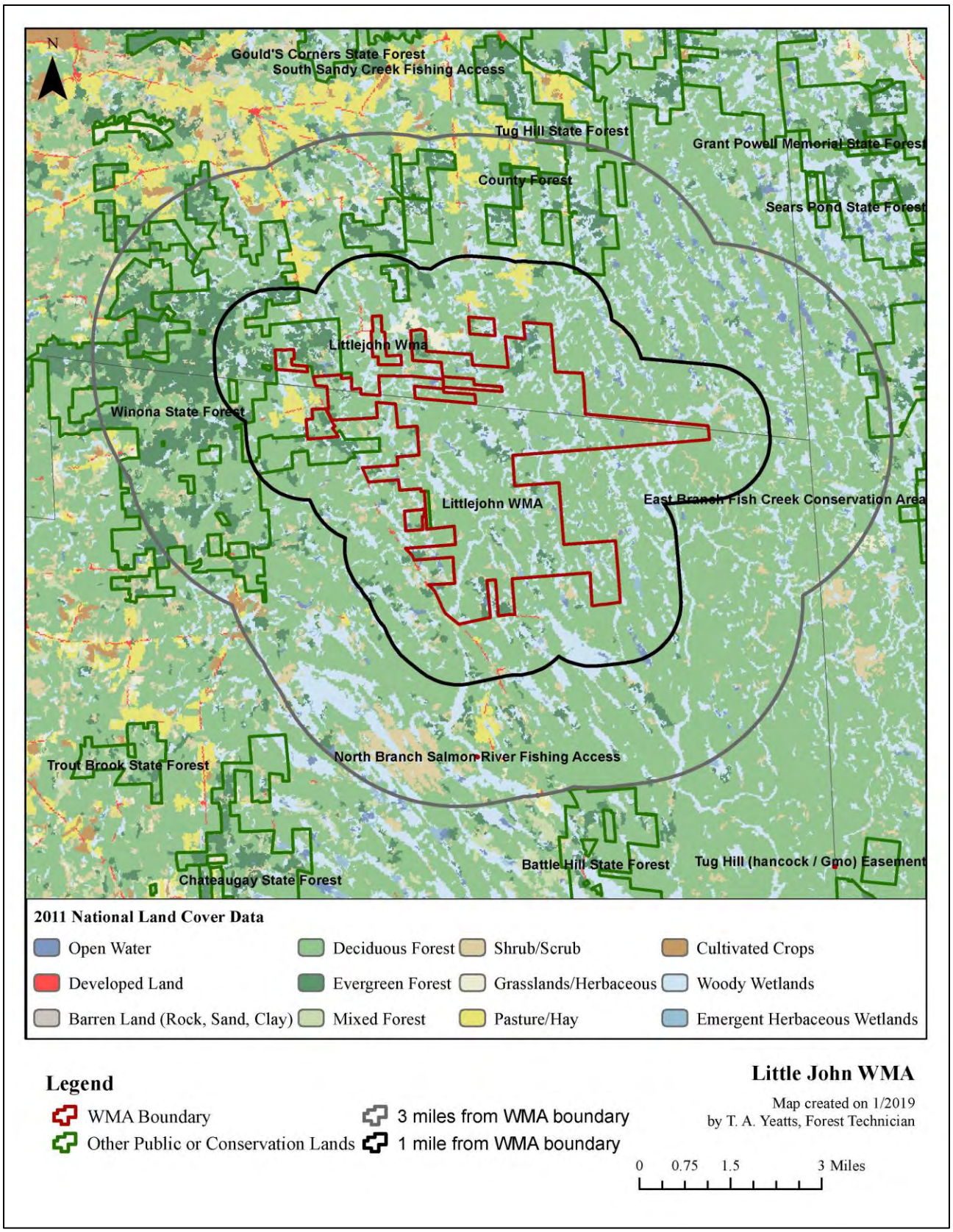


FIGURE 6. Land cover types and conservation lands in the landscape surrounding Little John WMA. Conservation lands are from the NY Protected Areas Database available online at http://www.nypad.org/. Land cover types are from the 2011 National Land Cover Data (NLCD) and differ from the habitat types used in the WMA habitat inventory. NLCD definitions are available online at http://www.mrlc.gov/nlcd2011.php.

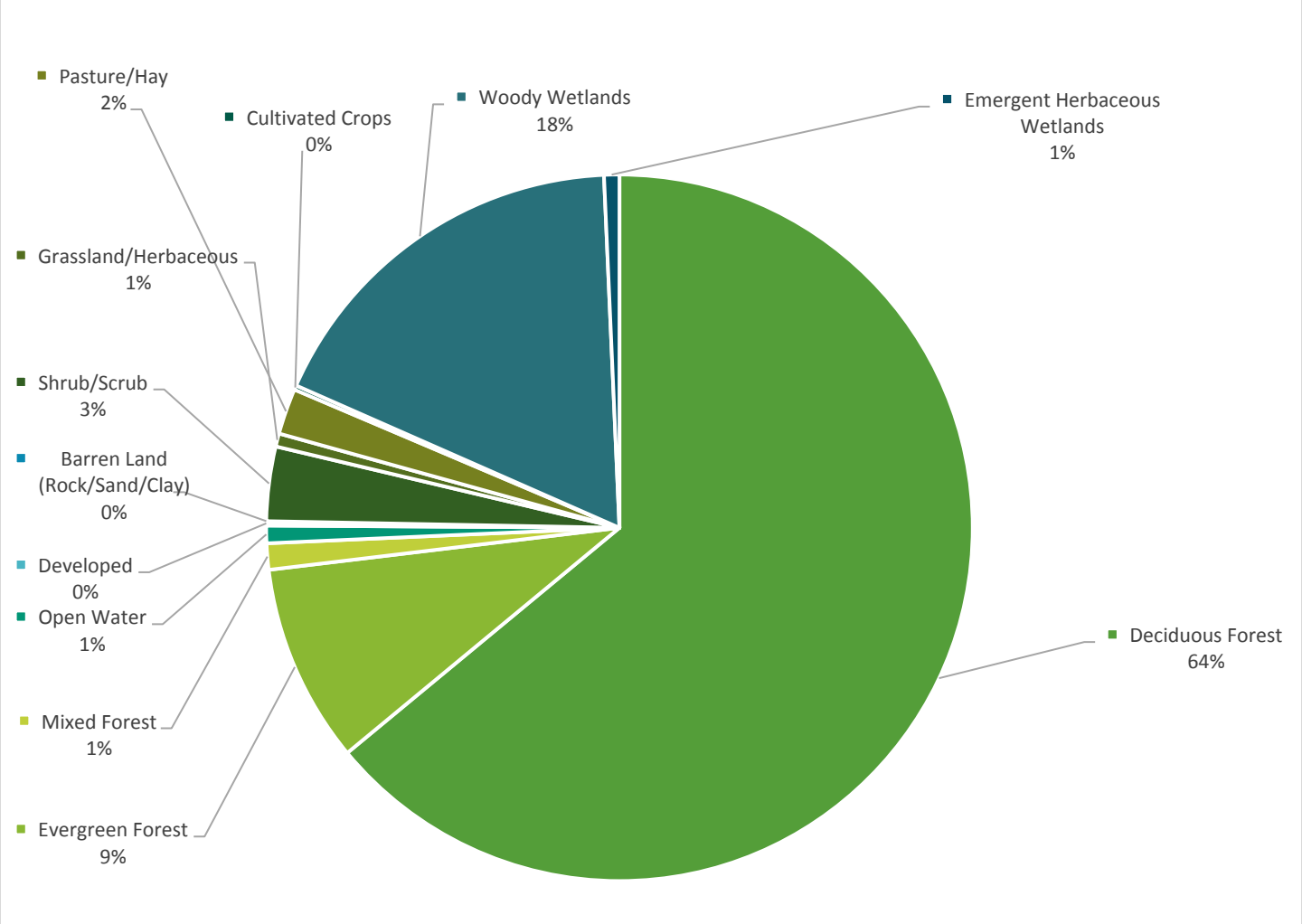
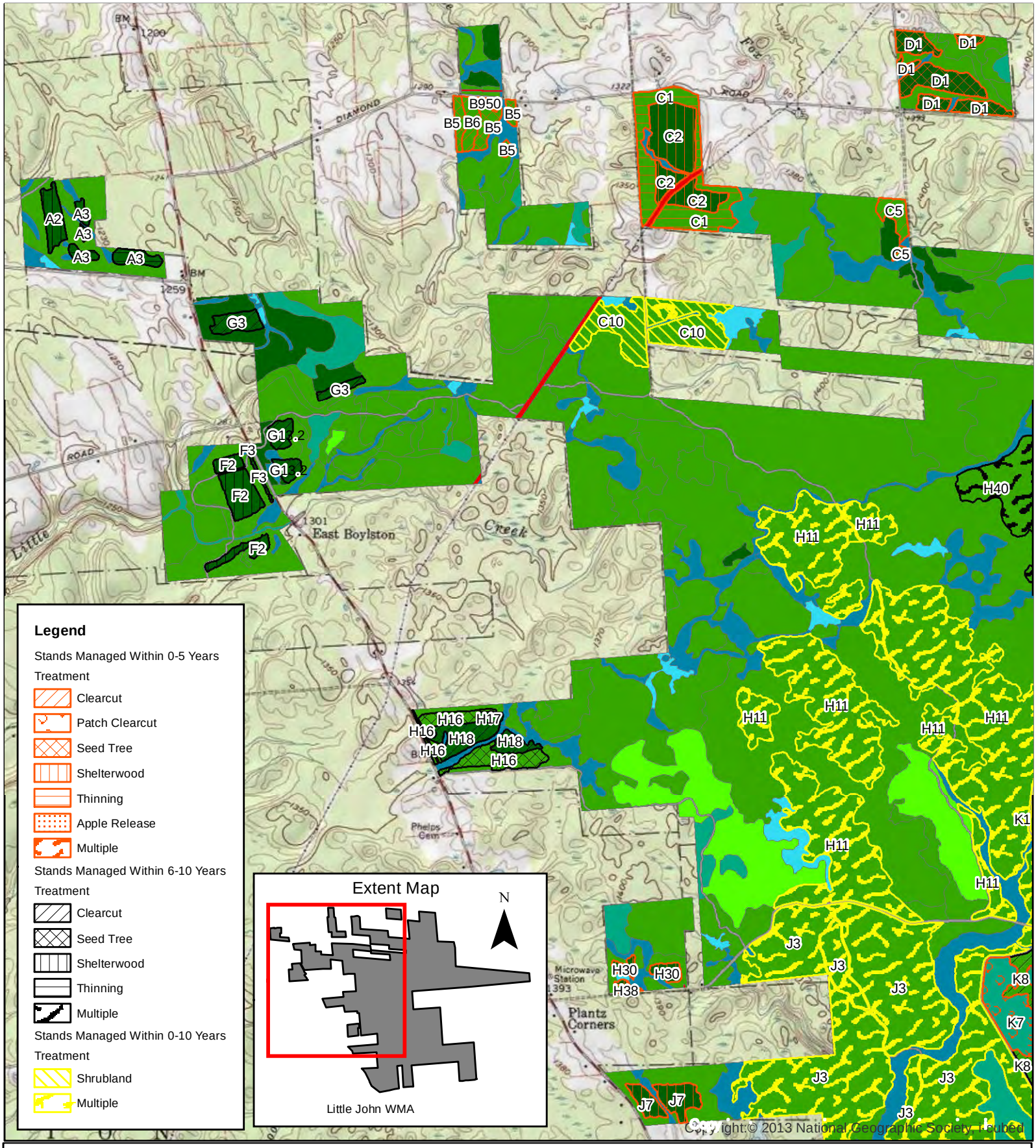


FIGURE 7. Percent cover of land cover types within three miles of Little John WMA. Land cover types are from the 2011 National Land Cover Data (NLCD) and differ from the habitat types used in the WMA habitat inventory. NLCD definitions are available online at https://www.mrlc.gov/data/legends/national-land-cover-database-2011-nlcd2011-legend.



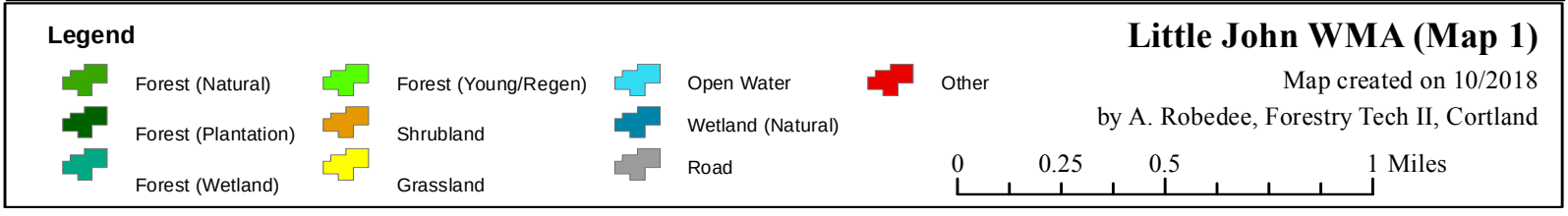
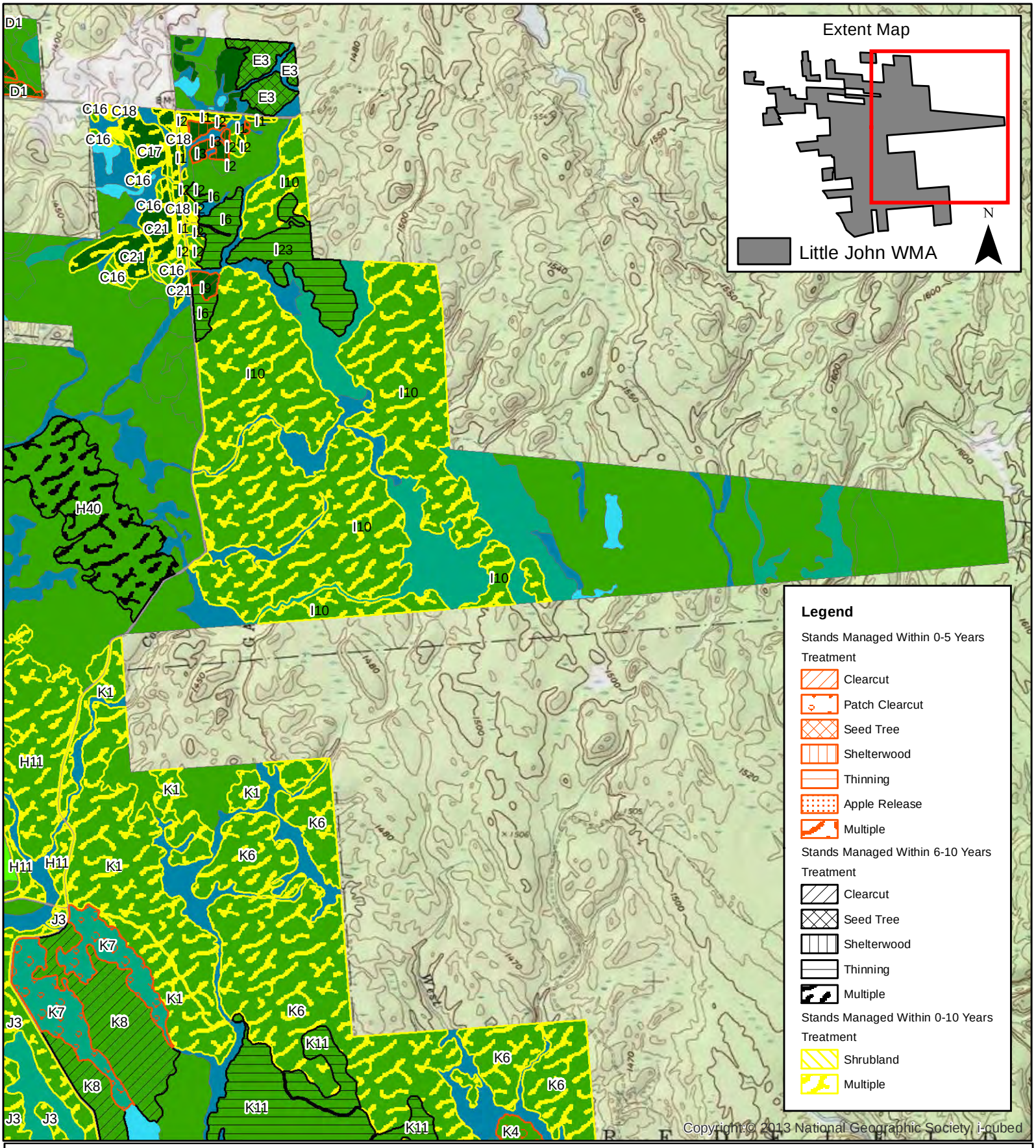


FIGURE 8. Habitat types and location(s) of proposed management on Little John WMA (Map 1 of 4, Northwest). Numbers indicate the stand number from habitat inventory.



Legend

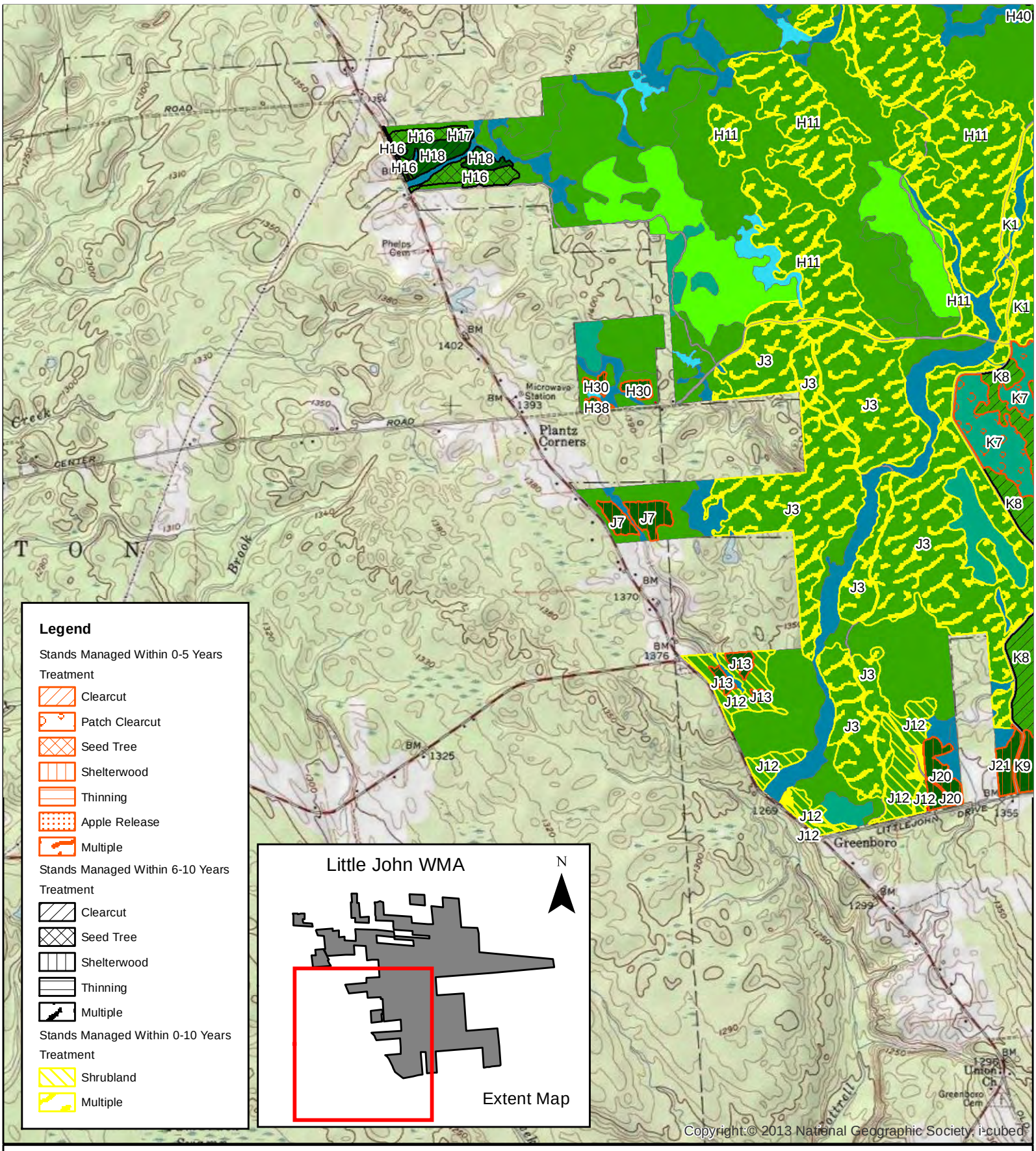
Forest (Natural)
Forest (Plantation)
Forest (Wetland)
Forest (Young/Regen)
Shrubland
Grassland
Open Water
Wetland (Natural)
Road
Other

Little John WMA (Map 2)

Map created on 10/2018
by A. Robedee, Forestry Tech II, Cortland

0 0.25 0.5 1 Miles

FIGURE 9. Habitat types and location(s) of proposed management on Little John WMA (Map 2 of 4, Northeast). Numbers indicate the stand number from habitat inventory.



Legend

Forest (Natural) | Forest (Young/Regen) | Open Water | Other

Forest (Plantation) | Shrubland | Wetland (Natural)

Forest (Wetland) | Grassland | Road

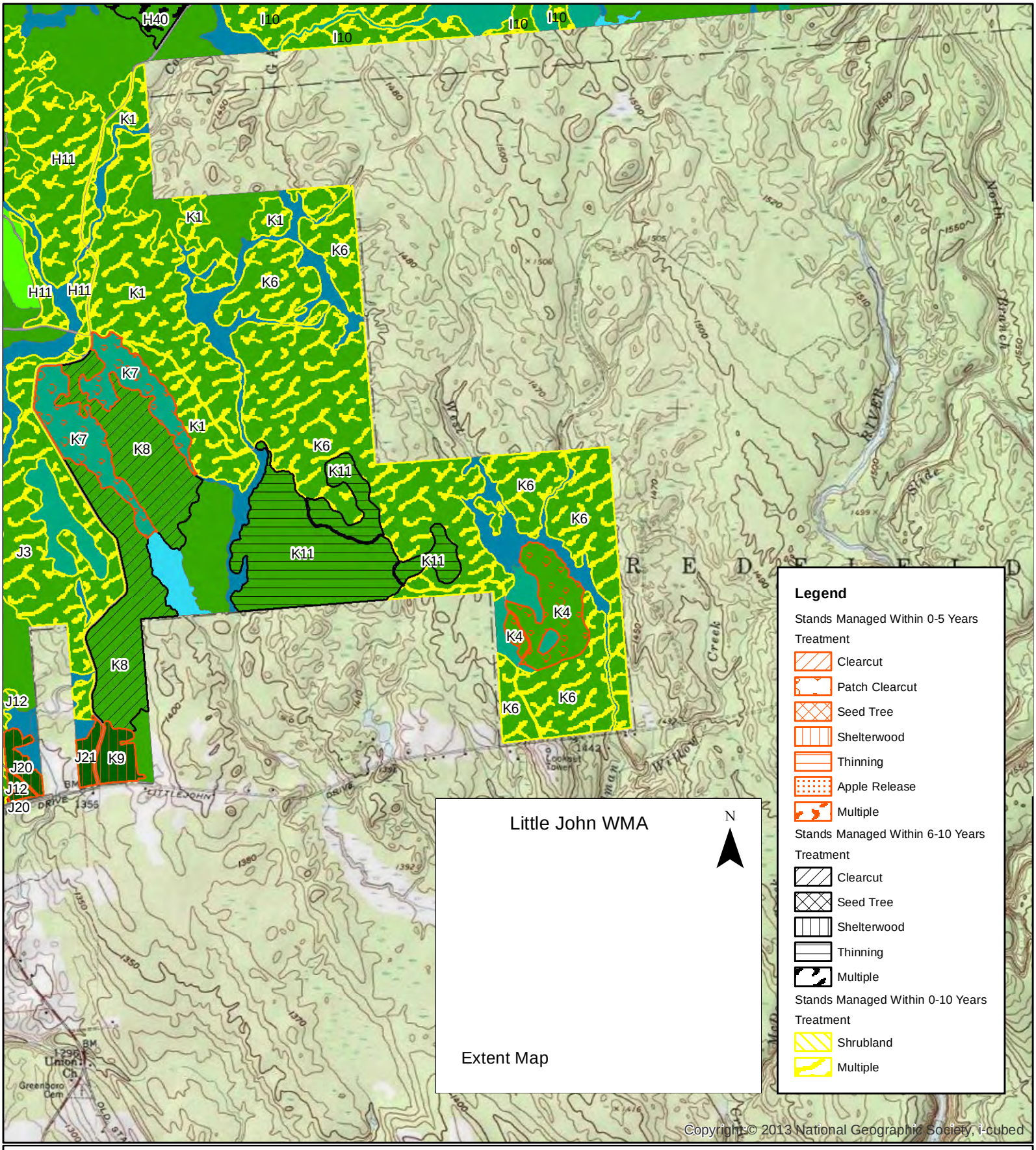
Little John WMA (Map 3)

Map created on 10/2018

by A. Robedee, Forestry Tech II, Cortland

0 0.25 0.5 1 Miles

FIGURE 10. Habitat types and location(s) of proposed management on Little John WMA (Map 3 of 4, Southwest). Numbers indicate the stand number from habitat inventory.



Legend

- Forest (Natural)
- Forest (Plantation)
- Forest (Wetland)
- Forest (Young/Regen)
- Shrubland
- Grassland
- Open Water
- Wetland (Natural)
- Road
- Other

Little John WMA (Map 4)

Map created on 10/2018

by A. Robedee, Forestry Tech II, Cortland

0 0.25 0.5 1 Miles

FIGURE 11. Habitat types and location(s) of proposed management on Little John WMA (Map 4 of 4, Southeast). Numbers indicate the stand number from habitat inventory.

IV. APPENDICES

APPENDIX A: DEFINITIONS

The following key words were used in the development of this Habitat Management Plan. Definitions are from The Dictionary of Forestry, Society of American Foresters, J. A. Helms, Editor, unless otherwise noted.

Best Management Practices: (BMP) A practice or combination of practices that are determined to be the most effective and practicable means of avoiding negative impacts of habitat management.

Biodiversity: The variety and abundance of life forms, processes, functions, and structures of plants, animals, and other living organisms, including the relative complexity of species, communities, gene pools, and ecosystems at multiple spatial scales.

Clearcut: A forest regeneration or harvest method that entails the cutting of essentially all trees, producing a fully exposed microclimate for the development of a new age class. Depending on management objectives, a clearcut may or may not have reserve trees left to attain goals other than regeneration.

Community: An assemblage of plants and animals interacting with one another, occupying a habitat, and often modifying the habitat; a variable assemblage of plant and animal populations sharing a common environment and occurring repeatedly in the landscape. (NY Natural Heritage Program)

Endangered Species: Any species listed on the current state or federal endangered species list as being in danger of extinction throughout all or a significant portion of its range.

Forb: Any broad-leafed, herbaceous plant other than those in the Poaceae (Gramineae), Cyperaceae, and Juncaceae families (i.e., not grass-like).

Forest: An ecosystem characterized by a dense and extensive tree cover, often consisting of stands varying in characteristics such as species composition, structure, age class, and associated processes, and commonly including meadows, streams, fish, and wildlife.

Forest Health: The condition of a forest derived from concerns about such factors as its age, structure, composition, function, vigor, presence of unusual levels of insects or disease, and resilience to disturbance.

Grassland Focus Area: Regions of NY that support key, residual populations of grassland birds. There are currently eight focus areas, within which there is a concentrated conservation effort for these species. (A Plan for Conserving Grassland Birds in New York, Audubon NY.)

Habitat: A place that provides seasonal or year round food, water, shelter, or other environmental conditions for an organism, community, or population of plants or animals.

Hardwood: A broad leaved, flowering tree belonging to the botanical group Angiospermae, such as red maple, yellow birch, American beech, black cherry, etc.

Impoundment: A pond caused by a dam across a stream and used for purposes such as water supply, water power, or wildlife habitat. (Edinger et al. 2002. Ecological Communities of New York State, Appendix B)

Landscape: A spatial mosaic of several ecosystems, landforms, and plant communities across a defined area irrespective of ownership or other artificial boundaries and repeated in similar form throughout.

Mast: The fruit of trees considered as food for wildlife. Hard mast is the fruits or nuts of trees such as oak, beech, walnut, and hickories. Soft mast is the fruits and berries from plants such as dogwood, viburnum, elderberry, huckleberry, hawthorn, grape, raspberry, and blackberry.

Multiple Use Area: Lands that were acquired by DEC to provide outdoor recreation and wherever possible the conservation and development of natural resources. As their name suggests, they are to be managed for a broader range of public use. (Public Use of Lands Managed by the Bureau of Wildlife)

Native: A plant or animal indigenous to a particular locality.

Old Growth Forest: Forest with an abundance of late successional tree species, at least 180 - 200 years of age in a contiguous forested landscape that has evolved and reproduced itself naturally, with the capacity for self-perpetuation, arranged in a stratified forest structure consisting of multiple growth layers throughout the canopy and forest floor, featuring canopy gaps formed by natural disturbances creating an uneven canopy, and a conspicuous absence of multiple stemmed trees. (Adapted from the NYS Strategic Plan for State Forest Management)

Pole: A tree of a size between a sapling (1" to 5" diameter at breast height) and a mature tree.

Regeneration Cut: A cutting procedure by which a new forest age class is created; the major methods are clearcutting, seed tree, shelterwood, selection, and coppice. The Young Forest Initiative includes these silvicultural treatments: clearcuts, seed tree cuts, and shelterwood cuts. Salvage (following a natural disturbance) will be considered based on the size and scope of the disturbance.

Seed Tree Method: A forest regeneration or harvest method that entails cutting of all trees except for a small number of widely dispersed trees retained for seed production and to produce a new age class in fully exposed microenvironment.

Shelterwood Method: A forest regeneration or harvest method that entails the cutting of most trees, leaving those needed to produce sufficient shade to produce a new age class in a moderated microenvironment.

Shrubland: A community dominated by woody plants typically less than ten feet tall with scattered open patches of grasses and forbs that provide floristic diversity. Typically characterized by >50% cover of shrubs and <25% canopy cover of trees. (Adapted from Edinger et al. 2002. Ecological Communities of New York State, Appendix B)

Softwood: A coniferous tree belonging to the botanical group Gymnospermae, such as white pine, Eastern hemlock, balsam fir, red spruce, etc.

Special Management Zone: A vegetation strip or management zone extending from wetland boundaries, high-water marks on perennial and intermittent streams, vernal pool depression, spring seeps, ponds and lakes, and other land features requiring special consideration. (Adapted from DEC Division of Lands and Forests Management Rules for Establishment of Special Management Zones on State Forests)

State Rank of Significant Ecological Communities:

S1 = Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State.
S2 = Typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York State.
S3 = Typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State.
S4 = Apparently secure in New York State.
S5 = Demonstrably secure in New York State.
SH = Historically known from New York State, but not seen in the past 15 years.
SX = Apparently extirpated from New York State.
SE = Exotic, not native to New York State.
SR = State report only, no verified specimens known from New York State.
SU = Status unknown.

(Edinger et al. 2002. Ecological Communities of New York State, Appendix A)

Stand: In forestry, a contiguous group of trees sufficiently uniform in age-class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable and manageable unit. In this HMP, the term "stand" is also applied to other habitat types (e.g., grassland, shrubland) to describe an area composed of similar vegetation composition and structure, as delineated during the habitat inventory.

Stand Prescription: A planned series of treatments designed to change current stand structure to one that meets management goals. Note: the prescription normally considers ecological, economic, and societal constraints.

Target Species: A suite of high priority wildlife species of conservation interest that are being targeted to benefit from management of a particular habitat type. For example, young forest target species at John White WMA include: snowshoe hare, American woodcock and ruffed grouse.

Unique Area: Lands that were acquired by DEC for their special natural beauty, wilderness character, geological, ecological, or historical significance for inclusion in the state nature and historical preserve. The primary purpose of these lands is to protect the feature of significance that led to the land being acquired by the state. (Public Use of Lands Managed by the Bureau of Wildlife)

Upland: Sites with well-drained soils that are dry to mesic (never hydric). (Edinger et al. 2002. Ecological Communities of New York State, Appendix B)

Wetland: "Freshwater wetlands means lands and waters of the state as shown on the freshwater wetlands map which contain any or all of the following:

(a) lands and submerged lands commonly called marshes, swamps, sloughs, bogs, and flats supporting aquatic or semi-aquatic vegetation of the following types: wetland trees, wetland shrubs, emergent vegetation, rooted, floating-leaved vegetation, free-floating vegetation, wet meadow vegetation, bog mat vegetation, and submergent vegetation;
(b) lands and submerged lands containing remnants of any vegetation that is not aquatic or semi-aquatic that has died because of wet conditions over a sufficiently long period, provided that such wet conditions do not exceed a maximum seasonal water depth of six feet and provided further that such conditions can be expected to persist indefinitely, barring human intervention;
(c) lands and waters substantially enclosed by aquatic or semi-aquatic vegetation as set forth in paragraph (a) or by dead vegetation as set forth in paragraph (b) the regulation of which is necessary to protect and preserve the aquatic and semi-aquatic vegetation as set forth in paragraph (a) or by dead vegetation as set forth in paragraph (b) the regulation of which is necessary to protect and preserve the aquatic and semi-aquatic vegetation; and
(d) the waters overlying the areas set forth in (a) and (b) and the lands underlying."

(Refer to NYS Environmental Conservation Law, Article 24 § 24-0107 for full definition.)

Wildlife Management Area: Lands that were acquired by DEC primarily for the production and use of wildlife, including hunting and trapping. These areas provide and protect wildlife habitats that are particularly significant in their capacity to harbor rare, threatened or endangered species, host unusual concentrations of one or more wildlife species, provide an important resting and feeding area for migratory birds, provide important nesting or breeding area for one or more species of wildlife, or provide significant value for wildlife or human enjoyment of wildlife. (Public Use of Lands Managed by the Bureau of Wildlife)

Young Forest: Forests that result from a regeneration cut, typically having a dense understory where tree seedlings, saplings, woody vines, shrubs, and herbaceous vegetation grow together. Young forests are typically 0-10 years old. (Adapted from www.youngforest.org). It is acknowledged that "young forests" will differ in their character in different ecological areas of the state and that 0-10 years is a continuum into more mature forest types. (Refer to: A DEC Strategic Plan for Implementing the Young Forest Initiative on Wildlife Management Areas 2015-2020)

APPENDIX B. COMPLIANCE WITH STATE ENVIRONMENTAL QUALITY REVIEW

This plan identifies habitat management activities to be conducted on the Wildlife Management Area. These activities were analyzed in the 1979 *Programmatic Environmental Impact Statement on Habitat Management Activities of the Department of Environmental Conservation; Division of Fish and Wildlife* (PEIS), as updated and amended in 2017 by the *Supplemental Final Environmental Impact Statement* (SFEIS).[17] Any activity that exceeds the thresholds of, or was not analyzed in the 1979 PEIS as amended in 2017, will require individual, site-specific environmental review. Environmental assessment forms prepared as a result of this review will be posted on the Environmental Notice Bulletin (ENB).[18]

The activities recommended in this plan:

- Will not adversely affect threatened or endangered plants or animals or their habitat.
    - Prior to implementation of any activity, staff review the NY Natural Heritage Program's "Natural Heritage Element Occurrence" database and perform field surveys when necessary. If a protected species is encountered in a project area, staff may establish buffer zones around the occurrence, move the project area, follow time-of-year restrictions, or cancel the project.
- Will not induce or accelerate significant change in land use.
    - All lands and waters within the WMA system are permanently protected as wildlife habitat.
- Will not induce significant change in ambient air, soil, or water quality.
    - Activities are designed to protect air, soil, and water quality through careful project planning, use of appropriate Best Management Practices, and establishment of Special Management Zones around sensitive land and water features requiring special consideration.
- Will not conflict with established plans or policies of other state or federal agencies.
    - Activities will follow established plans or policies of other state and federal agencies, including all relevant U.S. Fish and Wildlife Service rules and regulations.
- Will not induce significant change in public attraction or use.
    - The WMA system is part of a long-term effort to establish permanent access to lands in New York State for the protection and promotion of its fish and wildlife resources. Proposed activities will continue to protect, promote, and maintain public access to WMAs and their wildlife resources.
- Will not significantly deviate from effects of natural processes which formed or maintain an area or result in areas of significantly different character or ecological processes.
    - Activities will be conducted in a manner that maintains, enhances, or mitigates ecological processes and/or natural disturbances as appropriate for each WMA and habitat type. Some activities, such as even-aged forest management, intentionally result in areas of different character and ecological processes; however, they are not considered significant because they are ephemeral or transitional and will not permanently alter the landscape.
- Will not affect important known historical or archeological sites.
    - Activities that may result in ground disturbance are reviewed by DEC's State Historic Preservation Officer (SHPO) and/or the NYS Office of Parks, Recreation and Historic Preservation (OPRHP) to identify potential impacts to historical or archeological sites. Sensitive sites will be protected under the direction of DEC's SHPO and the OPRHP Archaeology Unit.
- Will not stimulate significant public controversy.

It is not anticipated that activities on WMAs will stimulate significant public controversy. A public comment period was held during development of both the PEIS and the SFEIS; no relevant comments in opposition of proposed management activities were received during the SFEIS public comment period. Staff also hold a public information session after completing each HMP, consider feedback from these sessions, and may adjust management as deemed appropriate. Kiosks, signs, webpages, articles, demonstration areas, and other outreach materials also raise awareness about habitat management activities.

[17] Available online at http://www.dec.ny.gov/regulations/28693.html.
[18] Available online at http://www.dec.ny.gov/enb/enb.html.

APPENDIX C: FOREST MANAGEMENT PRESCRIPTIONS

PRESCRIPTION FOR WILDLIFE MANAGEMENT AREA TIMBER HARVEST

Region: **Wildlife Management Area:** **Stand number:** **Stand acreage:**

Species composition:

Basal area: **Trees per acre:** **Mean stand diameter:**

Stand inventory or analysis date:

Regeneration data:

Natural Heritage Element Occurrence layer review:

SMZ layer review:

Retention data:

Soil types and drainage:

Interfering vegetation:

Acres to be treated: **Target basal area:**

Technical guidance/stocking guide:

Treatment purpose:

Management Objective: Even aged or Uneven Aged

-If even aged, specify treatment (i.e. shelterwood, seed tree, clearcut)

Clearcut acreage and configuration: (if applicable)

Natural Heritage /MHDB considerations and mitigation: (if applicable)

Retention considerations and adjustments:

Treatment descriptions:

Name and Title of Preparer:

Central Office Lands and Forests Staff **Date**

Regional Wildlife Manager **Date**

PRESCRIPTION NOTES

Species Composition: At a minimum, the three most common species found in the overstory should be included, assuming at least three species comprise the stand. Species that individually constitute less than 5% of the stand may be lumped together as "Other" or "Miscellaneous." For instance, if beech, hemlock and yellow birch each make up 3% of the stand, they may be lumped together as "Other – 9%."

Natural Heritage Element Occurrence layer review: List those species that the Natural Heritage Element Occurrence (EO) data layer indicates are or were known to be present in the stand, or could be affected by treatments to the stand. For instance, if a rare fish was indicated in a water body that is a short distance downstream of a creek that flows through the stand, it should be listed in the prescription.

SMZ layer review: The SMZ data layer includes Special Management Zones around all streams and wetlands, as well as vernal pools, spring seeps and recreation areas that staff have mapped and digitized. If any of these features are mapped incorrectly or are missing from current data layers, staff can correct their locations by editing their office layers.

Retention data: Include numbers of existing snags, cavity trees, Coarse Woody Material, Fine Woody Material, and legacy trees. Ocular estimates are acceptable.

Soil types and drainage: Specifically named soil types are useful, but not necessarily required. "Flat, sandy, well-drained hilltop" or "Steep, gravelly, moderately well-drained mid-slope" may be just as useful as "Hershiser-Koufax Sandy Silt Loam" in describing the soil conditions as they relate to management decisions. The important point is to note those characteristics that may limit equipment operation or establishment of regeneration. Soil type data is available for some counties on the Data Selector.

Interfering vegetation: Indicate the existing amount of interfering vegetation such as beech, striped maple, fern, etc. This may be quantified using mil-acre plots or by ocular estimate.

Technical guidance used: This may include stocking guides, articles found in technical journals, textbooks or other silviculture-related publications. Other sources of guidance may be acceptable as well.

Treatment purpose: As used here, "treatment purpose" and "management objective" (see below) are two different things. Also, "treatment purpose" is not what is to be done (i.e., "reduce basal area by 25%" or "remove every third row"), but rather is an explanation of why it is being done (i.e., "stimulate regeneration and increase growth of residual stand" or "regenerate current stand and convert to young forest").

Management objective: As used here, the term "management objective" is somewhat general. At a minimum, the prescription should indicate the desired future age structure and stand type. An entry as general as "Even aged hardwood" is acceptable, but regional staff may be more specific if they so choose. The management objective for a stand may be specified in the Habitat Management Plan (HMP) for the Wildlife Management Area in question. If the existing HMP does not specify the management objective regional staff should choose the management objective when the prescription is written.

Clearcut acreage and configuration: If the harvest involves one single clearcut, indicate the total contiguous area, in acres. If the harvest comprises more than one clearcut, indicate the total combined area of clearcuts, as well as the area of the largest clearcut.

Natural Heritage/MHDB considerations: Indicate what measures will be taken to protect those elements or features that were found in the review of the Natural Heritage Element Occurrence and Special Management Zone (not applicable yet) layers.

Retention considerations: Indicate whether or not existing levels meet the standards set forth in the Division's policy on Retention on State Forests, or whether they are expected to do so as a result of the proposed treatment. Also indicate if or how the treatment was adjusted in order to improve compliance with the policy standards.

Treatment description: The intended treatment should be clearly described. The amount of information necessary to accomplish this will vary greatly. For instance, in a row thinning of a pole timber sized plantation that had no SMZs or other special features, it may be sufficient to simply indicate "Remove two out of every six rows, taking two adjacent rows and leaving four rows between successive pairs being removed." An intermediate thinning in a sawtimber sized hardwood stand with a recreational trail, two streams and a known occurrence of an endangered plant community would require significantly more detail. One rule of thumb that could be used is to describe the treatment so that a qualified forestry professional could use it to assist in marking the harvest.

Additionally, since we are focused on creating young forests you should also address the presence/absence of advanced regeneration. If you are planning on clearcutting without advanced regeneration, address how you are going to mitigate that. For example, "This aspen stand will be clearcut and it is anticipated that future regeneration will be established through aspen root sprouting". Or, "This stand will be clearcut and replanted with Norway spruce to establish conifer cover."

Furthermore, if you are planning on conducting a shelterwood or seed tree cut, please indicate when you are planning on returning to the stand to conduct the final harvest (overstory removal).

APPENDIX D: AMENDMENTS

Any substantive changes to the habitat management described in this plan will be amended to the plan annually or as needed. Such changes may include: land acquisition, unforeseen natural disturbance, or any other change that alters the need for or the scope, method, or timing of management.